2020 / 2021

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Hoffmann Group®

1

MACHINING / CLAMPING TECHNOLOGY

Europe's leading system partner for quality tools

Your customer number

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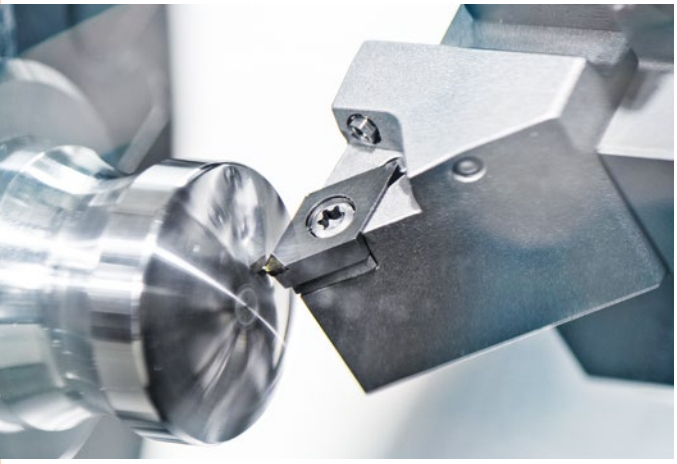
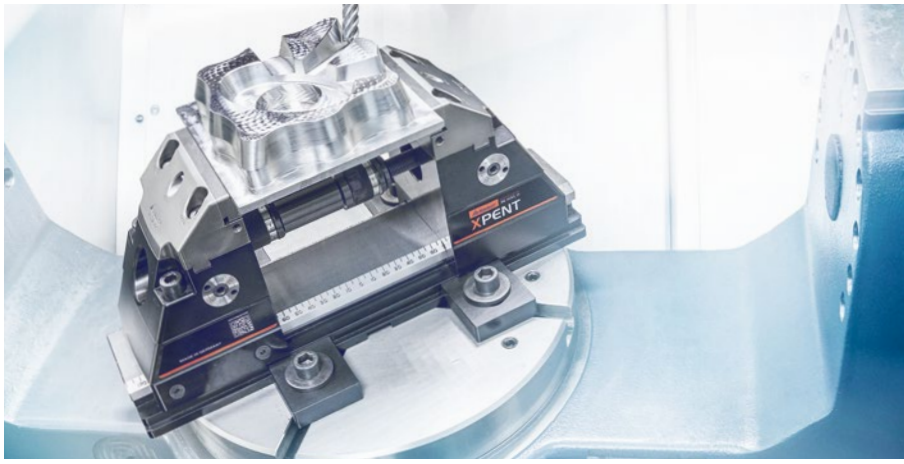



SIMPLY EVERYTHING TO DO WITH MACHINING. SIMPLY EVERYTHING FOR OPTIMISED PROCESSES.

A smooth and efficient procurement and production process is a critical factor for your commercial success. Sustainably optimise your machining production processes with us.

As a system partner for quality tools, we can offer you a service portfolio based on our unique combination of **competence as a trader, manufacturer and service provider:**

- **Trading competence:** The largest choice and the best logistics performance for the highest reliability in supplying tools.
- **Manufacturing competence:** GARANT premium quality for maximum innovation and quality assurance.
- **Service competence:** First-class service for sustained increases in productivity.

Hoffmann Group – Europe's leading system partner for quality tools

SYSTEM PARTNERSHIP

TRADING COMPETENCE

The highest reliability in supplying quality tools.

- Over 90,000 catalogue items.
- Items from the GARANT premium brand, the HOLEX quality brand, as well as 500 leading manufacturer brands.

The highest delivery accuracy for higher productivity.

- Over 99% delivery capability from our catalogue range*, with a delivery accuracy of 99.9%.
- Delivery in Germany and Austria possible within 24h; 48h for the rest of Europe.

The lowest capital tied up, thanks to the highest delivery reliability.

- The largest tooling logistics centre in Europe in Nuremberg.
- Numerous logistics sites worldwide.

MANUFACTURING COMPETENCE

Constant premium quality.

- More than 40,000 top certified tools for all application areas.

Highest levels of innovation.

- Developed with users, leading suppliers worldwide, institutes and 12 of our own technology centres.

Optimum performance for the best benefit-price ratio.

- Successful in the market for over 45 years.

*except items with bracketed prices ( ).
** 10-year warranty on materials and manufacture of GARANT products when used as intended, excluding regular wear as a result of mechanical stress and excluding all electronic components.

SERVICE COMPETENCE

Highly qualified technical knowledge in all fields.

- Machining specialists
- Metrology specialists
- Workstations and storage equipment specialists
- PPE specialists
- eBusiness experts

First class advice for you on site.

- Over 1,400 specialist consultants employed.

Network of specialist consultants throughout the world.

- We are by your side in over 50 countries.

OVERVIEW OF CATALOGUE VOLUMES

New structure by **application**

VOLUME 1
MACHINING / CLAMPING TECHNOLOGY

Drilling: HSS drills, solid carbide drills, indexable drills, countersinks, reamers
Threading: Taps, dies
Milling: Sawing, bore type end mills, HSS mills, solid carbide mills, indexable mills
Turning: Toolholders, boring bars, indexable inserts, grooving, broaching and knurling tools
Clamping technology: Arbors, lathe chucks, lathe centres, tapping heads, drill chucks, devices, vices, clamping elements, magnetic clamping technology

VOLUME 2
HAND TOOLS AND METROLOGY

Metrology: Calipers, micrometers, internal micrometers, dial indicators, height gauges, stands, rules, scales, voltage testers, gauges, gauge blocks, optical measuring tools, microscopes, contour and roughness measuring devices
Grinding and cutting: Files, burrs, grinding media, grinding discs and cutting discs, finish grinding and polishing tools, technical brushes, sawing technology, precision grinding
Fastening tools for screws: Spanners, sockets, torque tools, screwdrivers, bits, tool selections, tool boxes
Gripping, cutting and striking tools: Pliers, cable processing, bolt cutters, hammers, shears, riveting tools
Hand and assembly tools: Installation tools, knives, blades, clamps
Electronic tools and workshop supplies: Electrical and pneumatic tools, lamps and cables, adhesive technology, technical sprays, marking, lifting gear, cleaning devices

VOLUME 3
WORKSTATIONS AND STORAGE

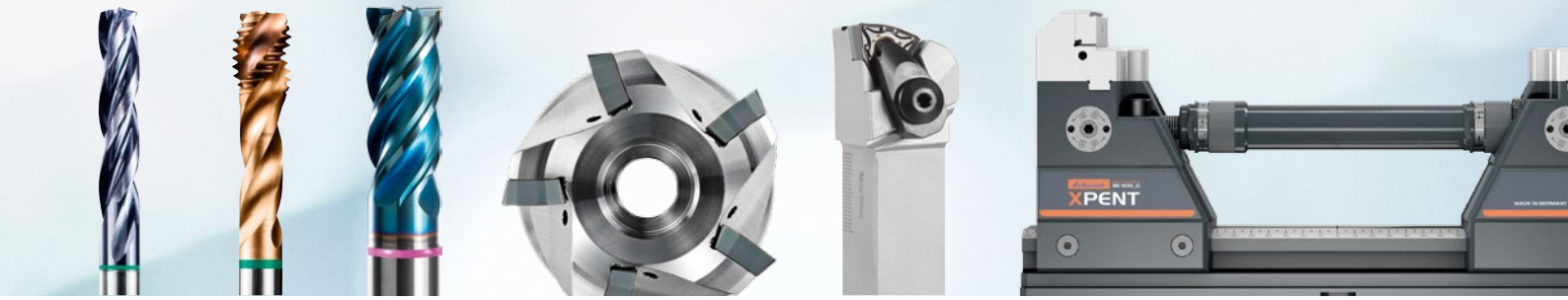
Roller cabinets, small parts storage, transport devices, modular arrangement systems, workstations, workbenches, tool cabinets, cabinets, seating and ladders, vices, CNC tool storage, Tool24 goods issuing systems, environmental technology, storage technology, office organisation, partition wall systems, container solutions

VOLUME 4
PERSONAL PROTECTIVE EQUIPMENT

Eye protection, hearing protection, head and face protection, breathing protection, hand protection, work clothing, protective workwear, foot protection, fall protection, skin protection and first aid, signs and notices

Volume 4 available in the EU

... and many more.



... and many more.

... and many more.

... and many more.

Choose your ordering path. Place the order. Done!

- **eShop:** www.hoffmann-group.com
- **Interactive catalogue browser:** Always available in 18 languages.
- **New – Hoffmann Group flip catalogue as an app for mobile devices:** Available at all times, even offline. Download from: www.ho7.eu/bk-app
- **Simple system:** The free-of-charge procurement marketplace. www.simplesystem.com
- **E-mail, fax or telephone** – for further details see page 2.

for external nut ∅			20-42	95-165
630	62 8510	Adjustable C-hook spanner **with square pin**	XXX	(XXX)
630	62 8520	Adjustable C-hook spanner **with square pin**, for torque wrenches	(XXX)	(XXX)
overall length (62 8510)		mm	180	335
effective length A (62 8520)		mm	100	220
overall length (62 8520)		mm	135	298

Order quantity	Article no.	Size
2	6 2 8 5 1 0	2 0 – 4 2

If shown **without** brackets ( ) = supplied from our **stock**

If shown **with** brackets ( ) = supplied from the **manufacturer**

5
10

Pack unit quantity: Quantities less than a pack unit are subject to a repackaging charge.

*... the **order quantity** (in units) ...*

*... the **article number** highlighted in grey and printed in bold ...*

*... and the desired **size designation** (printed bold in the catalogue, and highlighted in grey) **even if there is only one size listed ...***

*... together with saying your **customer number** or entering it in the appropriate field **– done!***

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- The catalogue and its layout and item numbering system are protected by copyright.
- The alloy metal surcharge (LZ) is already included in the price.

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QUICK AND EASY ORDERING. NO LONG NUMBERS.

Ask us about **worldwide** regrinding and re-coating solutions for your cutting tools.
Within **the European area** we undertake the evaluation of technical feasibility for you and also assess the cost-effectiveness of regrinding your tool. If regrinding is no longer technically feasible, we mark your tool and send it back to you **on a cost-neutral basis**. You can find more information at: **http://ho7.eu/regrinding**

The following tools can be reground by our regrinding service within **the European area**:

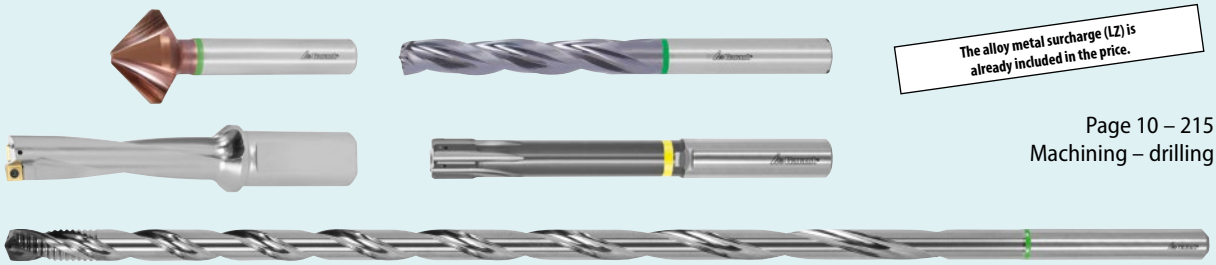
- Drills from ∅ 2mm
- Milling cutters from ∅ 4mm
- Reamers from ∅ 3mm
- Countersinks and circular saw blades

The following tools cannot be reground:

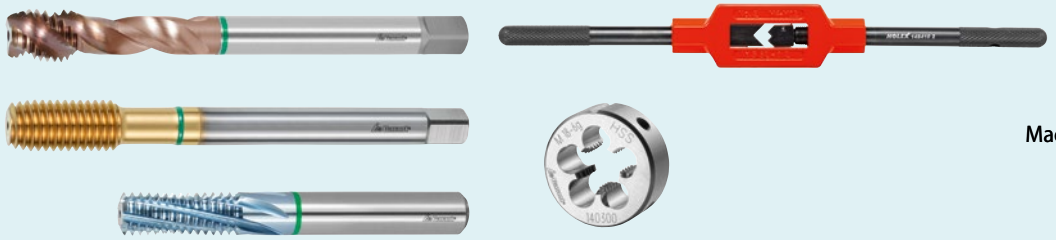
- Tools with diamond coating
- Router
- Band saw blades

Machining/clamping technology for optimal processes.
Now sorted by **application**
drilling, tapping, milling, turning and clamping.

The alloy metal surcharge (LZ) is already included in the price.



Page 10 – 215
Machining – drilling



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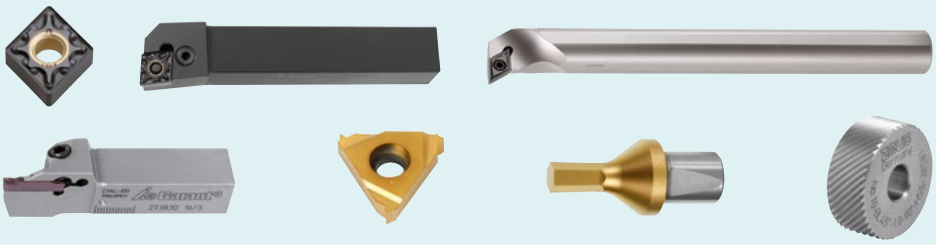
Machining – threads

Page 320 – 621
Machining – milling



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Machining – turning

Page 786 – 1080
Clamping technology

Cutting data and insert ISO code

ISO standard shafts and holes

Comparison table Vickers – Brinell – Rockwell – hardness and tensile strength

Information and index from page 1081

New products –
Machining – drilling

new

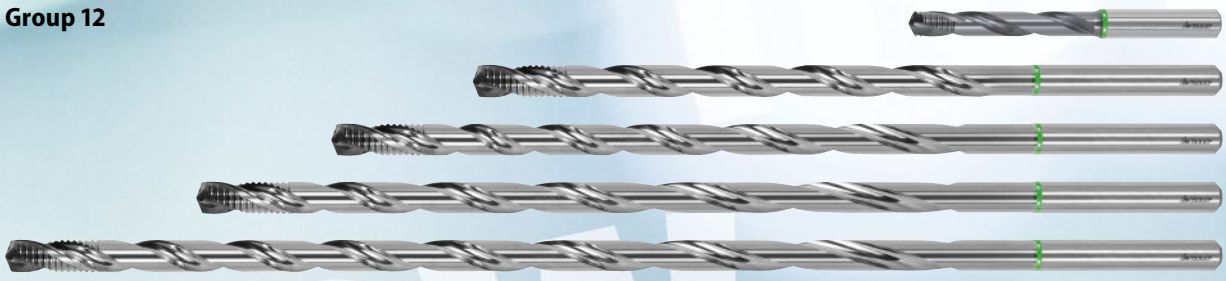
We use this symbol to tag new items in our catalogue range

Group 11

Page **45**
GARANT jobber drill, extra long, DIN 1869, HSS-E

Page **27**
GARANT stub drills DIN 1897 HSS-E

Group 12



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GARANT Master Steel DEEP. Innovative deep-hole drilling system 16×D to 30×D.
For very high precision and excellent chip evacuation (technical details on page 123)

Group 23

Page **142 / 143**
HOLEX Pro Drill indexable drills 2×D / 3×D / 4×D.
With SOMT… / XOMT… inserts

Group 15

Page **177**
GARANT high-precision countersinks for stainless steels,
with unequal spacing and 3-flat shank

Group 16

Page **208**
GARANT Master Alu high-performance reamers
with DLC coating,
specially for machining aluminium

Page **209**
GARANT Master Steel high-performance reamers
with TiAlN coating,
universal application

Specific versions available for through holes and blind holes

Machining – Drilling

Machining/clamping technology for optimal processes.
Now sorted by **application**
drilling, tapping, milling, turning and clamping.

HSS Mono drills
Technical literature, HSS drills
Overview page 14 / 15

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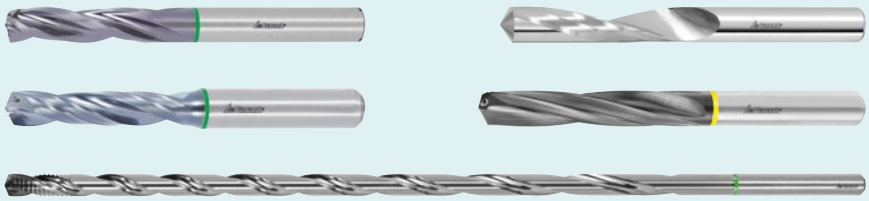

Solid carbide Mono drills
Solid carbide drills
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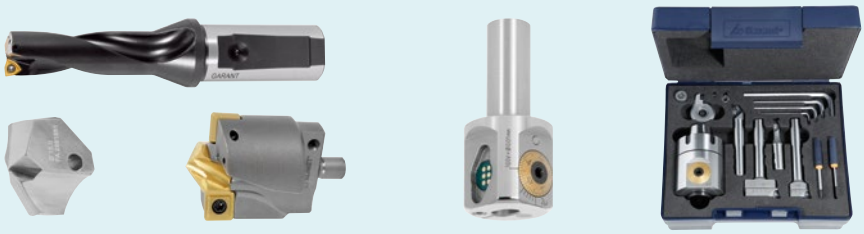

Modular drills
Overview page 129

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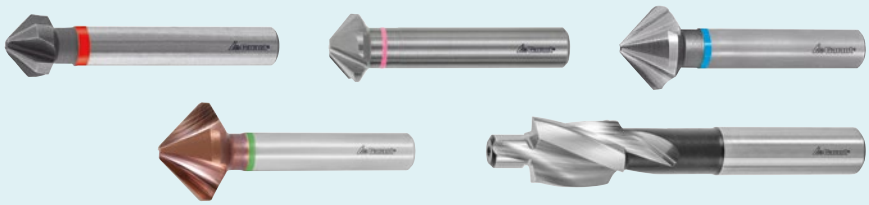

Mono countersinking
Countersinks

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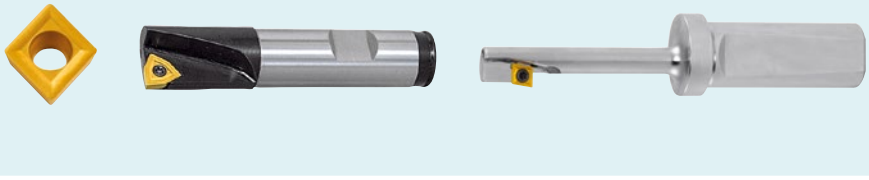

Modular countersinking

21 187 – 189

Mono reaming
Reamers
Overview page 190 / 191

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Modular reaming

23 214 – 215

Pictograms and graphics

Version

Tool material

HSS E	High-performance tool steel with 5 % cobalt	HSS E-PM	Powder metallurgy HSS	Solid carbide	Micrograin solid carbide in the range K10-K40 and P40	HSS E-SPM	Special powder metallurgy substrate with high cobalt content
PCD	Polycrystalline diamond	CERMET	Cermet				

Type

Type N	Type N = Standard		Solid carbide router cutter with high performance diamond cut	HR	Fine knuckle form		Left-hand cutting

Standard

DIN 206 B	Satisfies DIN 206	EN 22568	Satisfies Euro Standard 22568	Standard	Manufacturer's standard	DIN 371	Satisfies DIN 371

Shank

Solid carbide drills and milling cutters with shank DIN 6535 HA (from shank ∅ ≥ 6 mm) available with drive flat HB or HE if desired:

Please note the respective instruction text concerning the desired cutting tool.
Required: 1 pc. drill No. 12 2659 size 10 with HE drive flat:
Ordering example: 1 pc. No. 12 2659 size 10 +1 × No. 12 9100 HE

h6 DIN 1835 B	Shank in h6 tolerance with DIN 1835-B drive flat	h7	Tolerance h7 shank with 3 drive flats for use in a 3-jaw chuck

Generating a drive flat: Made to order – cannot be returned.

Length

25×D	Flute length 25× ∅ (deep hole drill)		Overall length of the cutting tool		Milling cutters with ground recess in the shank area (L4)		Ground recess diameter (D4)

Angle

180°	Stepped tool for 180° countersink angle		Milling cutter can advance in this direction	60°	Countersink with 60° point angle	90°	Counterbore	118°	118° point angle
90°	High-accuracy tool tolerance in the µm range	≠	Dynamic Twist pitch		undefined cutting edge chamfer	45°	45° cutting edge chamfer	R	Honed cutting edge

Form / teeth

	Special drill tip – for aramide fibres	3	Tool with 3 teeth		Form C		High-performance drill with 6 guide chamfers and IC	≠	Countersinks with unequal spacing for precision counterbores

Threads

MF	Metric fine threads	EG-M	Metric thread for wire inserts	60°	With 60° flank angle	CS 3	2-3 pitch chamfer lead Form C **with spiral point**		Required tapping drill hole ∅ for the subsequent tap

Note on the use of taps with coolant holes on synchronised spindles:
For optimum lubrication (for longest service life and highest process reliability) using cutting oil or MQL, we recommend GARANT quick-change tapping heads with minimum quantity lubrication system and minimum length compensation (MLA) No. 33 8100 – 8121.

Thread lead or pitch

	Dynamic. Cost-effective machining for highly demanding work.		**Synchronous.** Very high performance, for use on machines with synchronised spindles.	≠	Thread milling cutters with unequally spaced cutting edges

Tolerance

H7	For manufacturing to fit H7	ISO 2 6H	Metric ISO threads application class 2 6H = medium tolerance	m7	Cutter ∅ tolerance m7	–0.007 +0.002	Cutter ∅ tolerance dimensioning

Application

HPC	**High Performance Cutting** for very high machining volumes	MTC	**Multi Task Cutting** MTC tool with cutting force reduction	TPC	TPC	**Trochoidal Performance Cutting** A synthesis of a HPC and MTC tool	
	Pilot hole and co-pilot hole required	25 bar	With internal coolant supply at 25 bar minimum pressure. **For drills from 12×D a filter with 20 – 25 µm must be used in the coolant system.**				

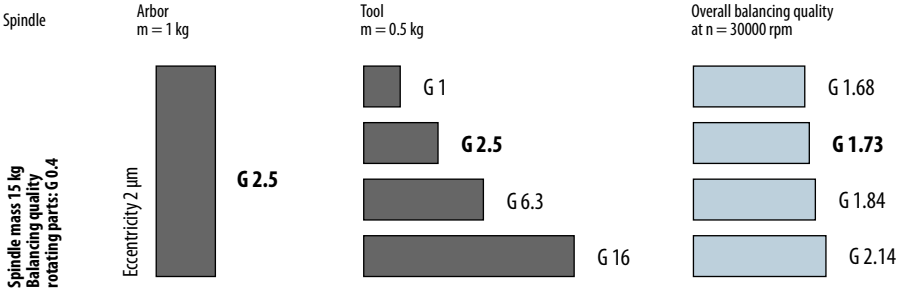
Balancing quality

G 2.5 n_{max} G 2.5 n_{max}

Milling cutter with balancing quality G 2.5 maintained up to the stated speed n_{max} (as shown on the shank marking).
Adequate balancing quality of the overall tooling system (arbor and tool) is important at high speeds.
The diagram shows examples of the relationship between various balancing qualities and the resulting overall balancing quality.

Example: Arbor G 2.5 + tool G 2.5 = overall balancing quality G 1.73

See machining handbook for more information No. 11 0010



Note: Precondition for achieving an overall balancing quality ≤ G2.5 is a balanced toolholder with a balancing quality G2.5.

Garant ToolScout – Special application tables for mono machining

Polymer materials

easy → difficult

Suitable for/ v_c [m/min]	PMMA acrylic	PE-HD	PA 66	PEEK	PF 31	AFRP aramid	PVDF GF20	POM GF25	PA 66 GF30	PEEK GF30	PTFE CF25	PEEK CF30	Hybrid	Honey-comb sandwich	MMC	GRP CRP	Graphite	Uni					
	Thermoplastics				Ther-mo		Plastics and fibres (GF / CF in %)						Sandwich			General							
ISO code	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N						
20 9785							200	190	170	150	180	160	●	350		190	340				●	●	●

Icons:
How the tool can be used

- Oil lubrication
- Emulsion (for taps with at least 8% grease)
- Minimal quantities of lubricant
- Dry machining
- Compressed air supply

Copper materials

easy → difficult

Suitable for/ v_c [m/min]	Alu plastics	AlCuPb AW2011 Index 50	CuZnPb CW603N Index 100	CuNiZn CW400J Index 90	CuSnZn CC493K Index 90	CuPb CW113C Index 80	CuSnPb CW458K Index 70	CuNiZn CW408J Index 60	CuZnPb CW604N Index 60	CuZnMn CW713R Index 50	CuAlFe CC333G Index 50	CuZnAl CC766S Index 40	CuBe CW101C Index 30	CuSiMn CW116C Index 30	ECu58 CW005A Index 20	ECu57 CW004A Index 20	WCu WCu80/20 Index 19	GRP CRP					
	Machining group I							Machining group II					Machining group III										
ISO code	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N					
13 2610		18	11	14	18	18	14	14	18	11	11	11			14	14				●	○		

Non-ferrous / steel materials

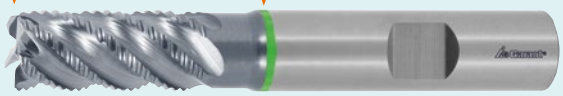
easy → difficult

Assignment of the ISO code																							
Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	K						
20 5548				200	180	160	140	110						50	35		200	●		●	○	●	●

v_c = 160 m/min
Average cutting speed **as application recommendation**

The GARANT colour code family:
Trouble-free **specification** and **application fields at a glance.**

● / **Bold script = highly suitable;**
○ / Normal script = suitable only under restricted conditions



Application recommendations for all cutting tools

f_z = 0.065 mm
Average feed rate
as application recommendation for full-slot machining, for Ø 12 mm.

f_z = 0.09 mm
Average feed rate
as application recommendation for side milling, for Ø12 mm.

Ø d11 DC	11X 20 5548 GARANT Master Steel SlotMachine solid carbide roughing end mill HPC TiAlN	Ls	Ltot		45°	< 900 N fz	< 900 N fz
mm		mm	mm	mm	mm	mm	mm
12	–	16	73	12	0,6	0,065	0,09
14	–	18	75	14	0,7	0,07	0,1

Lateral infeed a_e: (respective pictograms)

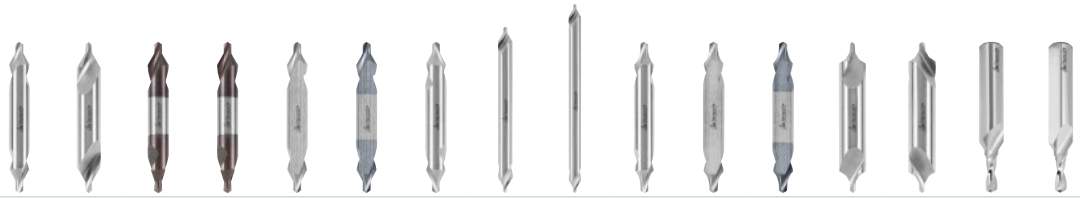
slot milled from solid	Side milling	Trochoidal	Copying
a_e = 1×D	a_e = 0.5×D	$a_{e\,max}$ = 0.2×D	a_e = 0.05×D

Uniform depth of cut a_p: (for variations see notes)

a_p = 1×D	a_p = 1×D	a_p = L_s	a_p = a_e

Note: For longer tool life and optimum results, we recommend for milling cutters with Ø ≤ 4 mm: a_p = 0.5×D.

Overview – HSS jobber drill range



Designation		Centre drills																
DIN >		333							Man. std		333						332/2	332/2
Item number		111000 / 111005	111050	111100	111105	111200	111205	111250	111290	111300	111350	111450	111455	111520	111540	11 1310	11 1313
Drill type		A	A	A	A	A (surface)	A (surface)	A / left-hand	A / long	A / long	R	R (surface)	R (surface)	B	B / left hand	A	A (surface)
Tool material		HSS	HSS-E	HSS-E	HSS-PM	HSS-E	HSS-E	HSS	HSS-E	HSS-E	HSS	HSS-E	HSS-E	HSS	HSS	HSS-E	HSS-E
Coating				TiAlN	TiAlN		TiAlN						TiAlN				
Centring angle / point angle		60°	60°	60°	60°	60°	60°	60°	60°	60°	60°	60°	60°	120° / 60°	120° / 60°	60°	60°
Size range (∅ mm)		0.5 – 10	0.5 – 6.3	1 – 4	0.5 – 4	1.6 – 6.3	1.6 – 6.3	0.5 – 8	0.75 – 3	1 – 5	0.5 – 6.3	1.6 – 6.3	1.6 – 6.3	1 – 5	2.5 – 6.3	M3 – M12	M4 – M24
for hand-held machines																	
Page	ISO	17	17	17	17	18	18	18	18	18	19	20	20	20	20	19	19
Aluminium, plastics	N	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Steel < 500 N/mm²	P	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Steel < 900 N/mm²	P	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Steel < 1400 N/mm²	P	○	●	●	●	●	●	○	●	●	○	●	●	○	○	●	●
INOX	M		●	●	●	●	●		●	●		●	●			●	●
Ti	S			●	●		●						●				
GG (G)	K		○	●	●	○	●		○	○		○	●			●	●
CuZn	N	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
UNI		○	○	○	●	○	○	○	○	○	○	○	○	○	○	●	●

Designation		Jobber drills, short				Jobber drills											
DIN >		1897				338											
Item number		113265	113280	113341 / 113421	113001	114001	114000	114020	114030	114150	114200	114360	114400	114405	114450	114470	114500
Drill type					N	N	N	N	N	N	W	N	N	N	FS	H	
Tool material		HSS-E	HSS-E-PM	HSS	HSS-E	HSS-E	HSS	HSS	HSS	HSS	HSS	HSS	HSS-E	HSS-E	HSS-E	HSS-E	HSS-E
Coating		TiAlN	TiAlN									TiN					TiAlN
Point angle		118°	130°	135°	130°	130°	118°	118°	130°	118°	130°	118°	130°	135°	130°	135°	130°
Size range (∅ mm)		1 – 13	1 – 12	2.5 – 9.6	1 – 20	1 – 20	1 – 13	1 – 20	1 – 20	0.2 – 20	0.9 – 13	1 – 16	1 – 16	1 – 13	1 – 13	2 – 12	1 – 13
for hand-held machines				●	●	●			●		●						
Page	ISO	27	27	28	29	30	31	31	32	32	34	34	35	35	36	36	37
Aluminium, plastics	N	○	○	○	○	○	○	○	○	○	●	○			●		
Steel < 500 N/mm²	P	●	○	●	●	●	●	●	●	●		●	○	●	●		
Steel < 900 N/mm²	P	●	●	○	●	●	●	●	●	●		●	●	●	○		○
Steel < 1400 N/mm²	P	○	●		●	●				○		○	●	●		○	
INOX	M	○	○		○	○						○	○	○		●	●
Ti	S	○										○	○			●	●
GG (G)	K	●	●		○	○	○	○	○	●		●	●		●		
CuZn	N	●	○		○	○			●	●		○	○				
UNI		●	○		●	●		○					●	○	○		

Designation		Jobber drills with MT shank								Stepped drills 90°						
DIN >		345			Man. std	343	341	1870		1897		8378	1897		Man. std	8374
Article number		116340	116320	116360	116380	116620	116700	116720	116760	117020	117040	117060	117120	117140	117160	117180
Drill type		N	N	VA	H	N	N	FS	N							
Tool material		HSS	HSS	HSS-E	HSS-Co8	HSS	HSS	HSS	HSS	HSS	HSS	HSS	HSS	HSS	HSS-E	HSS
Coating											TiAlN			TiAlN		
Point angle		118°	118°	135°	130°	120°	118°	130°	118°	118°	118°	118°	118°	118°	118°	118°
Size range (∅ mm)		5 – 70	13 – 70	10 – 35	8.5 – 30	7.8 – 50	10 – 50	10 – 30	8 – 30	3 – 12	3 – 12	3 – 12	3 – 10	3 – 10	4 – 10	3 – 10
for hand-held machines																
Page	ISO	47	47	48	48	49	50	50	51	51	51	52	52	52	53	53
Aluminium, plastics	N	○				○				○	○	○	○	○	○	○
Steel < 500 N/mm²	P	●	●	●		●	●	●	●	●	●	●	●	●	●	●
Steel < 900 N/mm²	P	●	○	●		●	●	●	●	●	●	●	●	●	●	●
Steel < 1400 N/mm²	P			○	●	○					○			○		
INOX	M			●		○										
Ti	S			●	●											
GG (G)	K	●	○	●		○	●		●	●	●	●	●	●	●	●
CuZn	N			●						○	○	○	○	○	○	○
UNI				○		○										

● very suitable ○ suitable only under certain conditions the application areas are reference values for pre-selec-

	NC spotting drills											Jobber drills, short						
	Man. std											1899/A	1897					
	112000	112010	112020	112060	112100	112103	112110	112160	112120	112140	112170	112300	113005	113020	113140	113150	113230	113260
	N	N	N	N	N / long	N / long	N	N / long	N	N	N / long	N	N	FS	FS	N	N	
	HSS-E	HSS-E-PM	HSS-E	HSS-E-PM	HSS-E	HSS-E	HSS-E	HSS-E	HSS-E	HSS-E	HSS-E	HSS-E-PM	HSS	HSS	HSS-Co8	HSS-E	HSS-E	HSS-E
			TiAlN	TiAlN	TiAlN		TiAlN	TiAlN		TiAlN	TiAlN				TiAlN		TiN	TiAlN
	90°	90°	90°	90°	90°	120°	120°	120°	142°	142°	142°	118°	130°	135°	130°	130°	130°	130°
	3 – 20	3 – 20	3 – 20	3 – 20	3 – 20	3 – 20	3 – 20	4 – 16	3 – 16	3 – 16	4 – 12	0.15 – 1.8	2 – 20	1 – 20	1 – 12	1 – 20	1 – 20	1 – 13
													●			●		
	21	21	21	21	21	22	22	22	22	22	22	23	24	25	25	26	26	27
	●	●	●	●	●	●	●	●	●	●	●	●	○	●	○	○		○
	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	●	●	●	●	●	●	●	●	●	●	●	●	●	○	●	●	●	○
	●	●	●	●	●	●	●	●	●	●	●	●			○	○	●	○
	●	●	●	●	●	●	●	●	●	●	●	●			○	○	○	●
			●	●	●		●	●		●	●	●			○	○	○	●
			●	●	●		●	●		●	●	○	○	●		●	●	
	●	●	●	●	●	●	●	●	●	●	●	●	●			○	○	●
	●	●	●	●	●	●	●	●	●	●	●	○		○	○	●		

					Jobber drills, long							Jobber drills, extra long					
					340							1869					1898 A
	114550	114580	114610	114620	116000	116040	116050	116061	116063	116065	116070	116240	116245	116250	116280	116285	116310
					N	W	N	FS	FS	N	VA	FS	N	FS	FS	N	
	HSS-Co8	HSS-E	HSS-E-PM	HSS-E-PM	HSS	HSS	HSS	HSS-E	HSS-E	HSS-E	HSS-E	HSS	HSS	HSS-E	HSS-E	HSS-E	HSS
	TiAlN	TiAlN	TiAlN	TiAlN					TiAlN						TiAlN	TiAlN	
	135°	118°	130°	130°	118°	130°	130°	130°	130°	118°	130°	130°	118°	130°	135°	118°	118°
	1 – 13	1 – 13	1 – 13	2 – 13	0.6 – 16	2.5 – 10	2 – 16	1 – 14	1 – 13	1 – 12	1 – 12	2.5 – 12	1 – 12	2.5 – 10.2	3 – 10.2	3 – 10	3 – 12
							●										
	37	37	38	38	42	42	42	43	43	44	44	45	45	45	46	46	46
		○	○	○		●	○	●	○			○	○	○	○		
		●	○	○	●		●	●	●	○	○	●	●	●	●	○	●
	○	●	●	●	●		●	○	●	●		○	●	●	●	●	○
	●	○	●	●					○	●			○	○		●	
	●	○	○	○						○	●			○		○	
	○	○	○	○					○								
		●	●	●	○		○	●	●			●	●	○			
		●	○	○			●			○						○	
		●	●	●					○	○							

	Stepped drills 180°				Taper sheet and tube drills			Stepped drills		Hole cutters / Core drills					
	1897		8376	8377	Man. std			Man. std		Man. std					
	117240	117260	117280	117320	118020	118030	118040	118320	118324	118400 – 118505	118780	118790	118800 / 118820	119000	119010
											30 mm	30 mm	30 / 55 mm	35 mm	25 mm
	HSS	HSS	HSS	HSS	HSS	HSS	HSS	HSS-E	HSS	Carbide	Carbide	HSS	HSS	Carbide	HSS
		TiAlN				TiN	TiAlN		TiAlN		TiAlN		TiAlN		
	118°	118°	118°	118°											
	3 – 10	3 – 10	3 – 10	5 – 20	3 – 60	3 – 60	4 – 30.5	4 – 60	4 – 30	16 – 120	14 – 26	12 – 50	12 – 50	12 – 65	12 – 32
					●	●	●	●	●	●					
	54	54	54	54	55	55	55	56	56	57	58	58	58	59	59
	○	○	○	○	○	○	○			○	○	●	●		●
	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	●	●	●	●	●	●	●	●	●	○	●	○	○	●	○
		○				○	○				○			○	
						○	○	○	○	○	●	○	○	●	○
	●	●	●	●	●	●		●			●		●	●	○
	○	○	○	○										●	
						○	○			●	●	●	●	●	

Handbooks, data calculators

Machining handbook

11 0010 – The **machining handbook** is a comprehensive, **2-part** reference book, **consisting of** Basics **No. 110015** and detailed information for the cutting data **No. 110020**. Here, the ambitious machining professional will find all the important information about materials and their machinability – compact, not favouring any specific manufacturer, and in a clear format.

11 0015 – Theoretical basic principles of machining, individually.

11 0020 – Cutting data tables for Catalogue 50, single.

Note:

11 0015 – The machining theory handbook is also available in the languages Czech, Hungarian and Romanian.
Please contact your Hoffmann representative if you require a copy.

11 0010

Language		DE	EN	DE50	INT50
18A 11 0010	Machining handbook - 2-part	XXX	XXX	–	–
18A 11 0015	Machining handbook - basics part	XXX	XXX	–	–
18A 11 0020	Machining handbook - cutting data part	–	–	XXX	XXX

Reference books

11 0955 – The **Metal workshop tables book** is an indispensable reference source for all metal-working trades. (size DE: German **with** formulary, size EN: English **without** formulary). Mathematical and physical data, materials engineering, construction, manufacturing and control engineering, standard parts, NC programming. DIN A5, more than 400 pages.

11 0956 – Like No. 110955 with formulae and CD-ROM.

11 0957 – The tutorial **metalworking reference book** is a reference book for education and training in the machine tool trades. The 8 chapters correspond to the elements of the education and training syllabus.

11 0955

11 0957

11 0956

Language		DE	EN
18A 11 0955	Engineer's reference book	XXX	XXX
18A 11 0956	Engineer's reference book with CD-ROM	XXX	–
18A 11 0957	Metalworking reference book with CD-ROM	XXX	–

Calculation aids, display units

11 0960 – **Drilling data calculator** (in the German language) as double-sided calculation disc ∅ 130 mm of high quality plastic for determining speeds and feeds in different materials. Gives all individual values (cutting speed, spindle speed, feed rate) together with cycle times.

11 0965 – The **speeds and feeds calculator** in German (DE) and English (EN) quickly and easily finds **the correct speeds and feeds for all GARANT milling cutters and lathe tools:** n = 10 – 30,000 rpm.

11 0966 – **The tolerance slide** quickly and easily determines the upper and lower values of the ISO tolerance bands (up to nominal size 180 mm). The base body is printed on both sides and carries a read-off runner. Of high quality plastic. The **legends are printed in several languages** (German, English, French) for international use.

11 0971 – **The Tolerator indicates all tolerance values** according to ISO recommendation R286 – 1962 up to nominal size 500 mm. The legends are printed in **several languages** for international use. The housing protects it from dirt.
Size: 110×60×30 mm.

11 0972 – **The Filetor** indicates the **thread name,** the **range, and** all the respective **defined sizes.**

11 0990 – **Technical calculator with 252 integral functions** (e.g. logarithms, exponential and trigonometric functions). Large easy-to-read display, with battery and solar cell. Supplied with battery and hard case for protection. (See No. 081560 LR44 for spare battery)

11 0960

11 0965

11 0966

18A 11 0960	Garant	Drilling data calculator with pocket case	XXX

Language		DE	EN
18A 11 0965	Garant	Speeds and feeds calculator	XXX	XXX

18A 11 0966	Garant	Tolerance slide	XXX
Length		mm	280
Width		mm	90
18A 11 0971		Tolerator (ISO tolerance key)	XXX
18A 11 0972		Filetor (thread indicator)	XXX
18A 11 0990		Pocket calculator	XXX

11 0990

110971

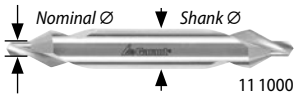
11 0972

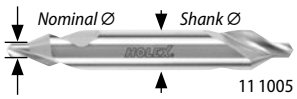
HSS | DIN 333 | Type A | k12 | 60° | h7

Centre drill

Ground from solid and relief ground, spiral fluted.

Size 0,5–0,8 – Single-ended.





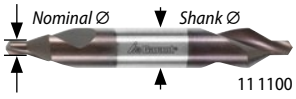
Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	CuZn	Uni
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	N	
11 1000/1005	70	45		40	30	25	10	8									80	○

Nominal k12	11A 11 1000	12A 11 1005	for workpiece Ø			
	Centre drill HSS				L_{tot}	< 900 N f
	A					
mm			mm	mm	mm	mm/rev.
0,5	XXX	–	< 4	3.15	25	0.01
0,8	XXX	–	4 – 6	3.15	25	0.01
1	XXX	XXX	6 – 8	3.15	31.5	0.02
1,25	XXX	XXX	8 – 10	3.15	31.5	0.02
1,6	XXX	XXX	10 – 15	4	35.5	0.02
2	XXX	XXX	15 – 20	5	40	0.02
2,5	XXX	XXX	20 – 30	6.3	45	0.03
3,15	XXX	XXX	30 – 40	8	50	0.03
4	XXX	XXX	40 – 63	10	56	0.03
5	XXX	XXX	63 – 100	12.5	63	0.04
6,3	XXX	XXX	100 – 150	16	71	0.05
8	XXX	XXX	150 – 250	20	80	0.06
10	XXX	XXX	> 250	25	100	0.09

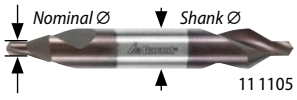
DIN 333 | Type A | k12 | 60° | h7

HSS E

HSS E



HSS E-PM



Garant Centre drill

Ground from solid and relief ground, spiral fluted.

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	CuZn	Uni
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	M	M	S	K	N	
11 1050	70	45		40	30	25	10	8					12	8		25	80	○
11 1100	70	45	40	40	30	25	10	8					12	8	5	25	80	○
11 1105	100	60	40	60	50	40	20	10	5				15	10	8	40	80	●

Nominal k12	11A 11 1050	11A 11 1100	11A 11 1105	for workpiece Ø					
	Centre drill HSS-E		HSS-E-PM centre drill				L_{tot}		< 900 N f
	A				11 1050	11 1100 11 1105	11 1050	11 1100 11 1105	
mm		TiAlN	TiAlN	mm	mm	mm	mm	mm	mm/rev.
0,5	XXX	–	XXX	< 4	3.15	3.15	25	25	0.01
0,75	XXX	–	–	4 – 6	3.5	–	35	–	0.01
1	XXX	XXX	XXX	6 – 8	4	3.15	35	31.5	0.02
1,5	XXX	–	–	8 – 15	5	–	40	–	0.02
1,6	XXX	XXX	XXX	10 – 15	4	4	35.5	35.5	0.02
2	XXX	XXX	XXX	15 – 20	6	5	45	40	0.02
2,5	XXX	XXX	XXX	20 – 30	8	6.3	50	45	0.03
3	XXX	–	–	20 – 40	8	–	50	–	0.03
3,15	XXX	XXX	XXX	30 – 40	8	8	50	50	0.03
4	XXX	XXX	XXX	40 – 63	10	10	55	56	0.03
5	XXX	–	–	63 – 100	12	–	63	–	0.04
6,3	XXX	–	–	100 – 150	16	–	71	–	0.05

DIN 333 | Type A | k12 | 60° | h7

Garant Set of centre drills in a case

Composed of centre drills DIN 333.

Content:

11 1055 – Centre drill No. 111050, 1 pc. each in size 0.75; 1; 1.5; 1.6; 2; 2.5; 3; 3.15; 4; 5.

11 1155 – Centre drill No. 111105, 1 pc. each in size 0.5; 1; 1.6; 2; 2.5; 3.15; 4.

Type			10	7
11A 11 1055	Centre drill set HSS-E No. 111050 in a case		XXX	–
11A 11 1155	Centre drill set HSS-E-PM No. 111105 in a case	TiAlN	–	XXX
Number of drills			10	7

HSS E

11 1055

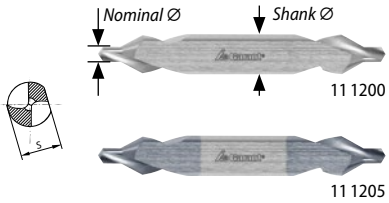
HSS E-PM

11 1155

HSS E | DIN 333 | Type A | k12 | 60° | h7

Centre drill with flat

Ground from solid and relief ground, spiral fluted.



Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	CuZn	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	M	M	S	K	N						
11 1200	70	45		40	30	25	10	8					12	8		25	80	○	●	●			
11 1205	70	45	40	40	30	25	10	8					12	8	5	25	80	○	●	●			

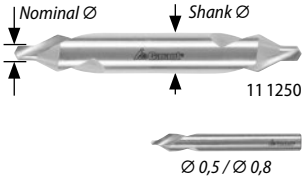
Nominal k12	11A 11 1200 / 11A 11 1205 Centre drill HSS-E A with flat	TiAlN	s – 0.1	L_{tot}	< 900 N f
mm			mm	mm	mm	mm/rev.
1,6	XXX	XXX	4	3.25	35	0.02
2	XXX	XXX	5	4.2	40	0.02
2,5	XXX	XXX	6.3	5.35	45	0.03
3,15	XXX	XXX	8.3	6.95	50	0.03

Nominal k12	11A 11 1200 / 11A 11 1205 Centre drill HSS-E A with flat	TiAlN	s – 0.1	L_{tot}	< 900 N f
mm			mm	mm	mm	mm/rev.
4	XXX	XXX	10	8.4	55	0.03
5	XXX	XXX	12.5	10.95	63	0.04
6,3	XXX	XXX	16	14	71	0.05

HSS | DIN 333 | Type A | k12 | 60° | h7

Centre drill, left-hand cutting

Ground from solid and relief-ground.
Left–hand cutting, spiral fluted.
Size 0,5–0,8 – Single-ended.



Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	CuZn	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	N						
11 1250	70	45		40	30	25	10	8									80	○	●	●			

Nominal k12	11A 11 1250 Centre drill HSS A left-hand	for workpiece Ø	L_{tot}	< 900 N f
mm		mm	mm	mm	mm/rev.
0,5	XXX	< 4	3.15	25	0.01
0,8	XXX	4 – 6	3.15	25	0.01
1	XXX	6 – 8	3.15	31.5	0.02
1,25	XXX	8 – 10	3.15	31.5	0.02
1,6	XXX	10 – 15	4	35.5	0.02
2	XXX	15 – 20	5	40	0.02

Nominal k12	11A 11 1250 Centre drill HSS A left-hand	for workpiece Ø	L_{tot}	< 900 N f
mm		mm	mm	mm	mm/rev.
2,5	XXX	20 – 30	6.3	45	0.03
3,15	XXX	30 – 40	8	50	0.03
4	XXX	40 – 63	10	56	0.03
5	XXX	63 – 100	12.5	63	0.04
6,3	XXX	100 – 150	16	71	0.05
8	XXX	150 – 250	20	80	0.06

HSS E | Standard | Type A | k12 | 60° | h7

Long and extra long centre drills

Ground from solid and relief-ground.
Spiral fluted, extra long shank, similar to DIN 333-A.

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	GG(G)	CuZn	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	K	N						
11 1290/1300	70	45		40	30	25	10	8						12	8	25	80	○	●	●			

Nominal Ø k12	11A 11 1290 Centre drill HSS-E, long	11A 11 1300 Centre drill HSS-E, extra long A	for work-piece Ø	L_{tot} 11 1290	L_{tot} 11 1300	< 900 N f
mm			mm	mm	mm	mm	mm/rev.
0,75	XXX	–	< 6	3.5	60	–	0.01
1	XXX	XXX	6 – 8	4	60	120	0.02
1,5	XXX	–	8 – 15	5	60	–	0.02
1,6	–	XXX	10	5	–	120	0.02
2	XXX	XXX	15 – 20	6	80	120	0.02

Nominal Ø k12	11A 11 1290 Centre drill HSS-E, long	11A 11 1300 Centre drill HSS-E, extra long A	for work-piece Ø	L_{tot} 11 1290	L_{tot} 11 1300	< 900 N f
mm			mm	mm	mm	mm	mm/rev.
2,5	XXX	XXX	20 – 30	8	80	120	0.03
3	XXX	–	20 – 40	8	80	–	0.03
3,15	–	XXX	30 – 40	10	–	120	0.03
4	–	XXX	40 – 63	10	–	120	0.03
5	–	XXX	63 – 100	14	–	120	0.04

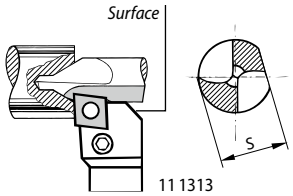
HSS E | DIN 332/2 | Type A | 0 –0.05 | 60° | h7

Garant Stepped centre drill for tapping hole, 60°

Stepped centre drill for tapping holes to Form A.
For **combined production** of centring, entry chamfer and tapping hole **all in a single operation.**

11 1313 – With additional flats on the shank.

11 1310



11 1313

11 1313

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	CuZn					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	K	N					
11 1310/1313	65	65	60	28	30	30	9	7						7			28	35	●	●			

for threads	11A 11 1310	11A 11 1313											
	HSS-E centre drill for tapping holes			(± 0,05)						s – 0,1		< 900 N	
	A	A with flat	mm	mm	mm	mm	mm	mm	mm	11 1313 mm	mm	f mm/rev.	
M3	XXX	–	2.5	3.2	6	8	9	6	–	55	0.03		
M4	XXX	XXX	3.3	4.3	8	11	12.6	8	6.75	63	0.05		
M5	XXX	XXX	4.2	5.3	10	13	15.1	10	8.45	67	0.07		
M6	XXX	XXX	5	6.4	12.5	16	18.9	12.5	10.45	71	0.1		
M8	XXX	XXX	6.8	8.4	14	19	23	14	12.5	88	0.12		
M10	XXX	XXX	8.5	10.5	16	23	27.7	16	14.85	90	0.15		
M12	XXX	XXX	10.2	13	20	28	34.5	20	18.45	105	0.2		
M16	–	XXX	14	17	25	33	41.3	25	23.4	132	0.25		
M20	–	XXX	17.5	21	31.5	38	48.3	31.5	29.35	145	0.3		
M24	–	XXX	21	25	40	45	57	40	36.5	160	0.4		

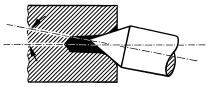
HSS | DIN 333 | Type R | k12 | 60° | h7

Garant Centre drill

Ground from solid and relief ground, spiral fluted.
Centre drill with radius form R:

- The radius curve eliminates the sharp transition from drill point to countersink angle that is present on form A, so the risk of fracture is reduced.
- In the event of angular misalignment of the lathe centre, the ring bearing face avoids the component running only on the external or internal edge of the bearing face. Even if the lathe centres are not in line, good support is provided.

Size 0,5–0,8 – Single-ended.



Ø 0,5 / Ø 0,8

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	CuZn	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	N						
11 1350	70	45		40	30	25	10	8									80	○	●	●			

Nominal k12	11A 11 1350	for workpiece Ø			< 900 N
	Centre drill HSS			L_{tot}	f
mm	R	mm	mm	mm	mm/rev.
0,5	XXX	< 4	3.15	25	0.01
0,8	XXX	4 – 6	3.15	25	0.01
1	XXX	6 – 8	3.15	31.5	0.02
1,25	XXX	8 – 10	3.15	31.5	0.02
1,6	XXX	10 – 15	4	35.5	0.02
2	XXX	15 – 20	5	40	0.02
2,5	XXX	20 – 30	6.3	45	0.03
3,15	XXX	30 – 40	8	50	0.03
4	XXX	40 – 63	10	56	0.03
5	XXX	63 – 100	12.5	63	0.04
6,3	XXX	100 – 150	16	71	0.05

HSS E | DIN 333 | Type R | k12 | 60° | h7

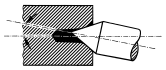
Garant Centre drill with flat

Ground from solid and relief ground, spiral fluted.
Features of centre drills with radius form R: See No. 111350.

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	CuZn	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	M	M	S	K	N						
11 1450	70	45		40	30	25	10	8					12	8		25	80	○	●	●			
11 1455	70	45	40	40	30	25	10	8					12	8	5	25	80	○	●	●			

Nominal k12	11A 11 1450	11A 11 1455		s – 0.1	L_{tot}	< 900 N f
	Centre drill HSS-E R with flat					
mm		TiAlN	mm	mm	mm	mm/rev.
1,6	XXX	XXX	4	3.25	35.5	0.02
2	XXX	XXX	5	4.2	40	0.02
2,5	XXX	XXX	6.3	5.35	45	0.03
3,15	XXX	XXX	8	6.95	50	0.03
4	XXX	XXX	10	8.4	55	0.03
5	XXX	XXX	12.5	10.95	63	0.04
6,3	XXX	XXX	16	14	71	0.05

HSS | DIN 333 | Type B | k12 | 120°/60° | h7



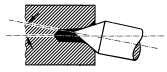
Garant Centre drill with protective countersink

Ground from solid and relief-ground.
With additional centre protection (120° countersink angle), spiral fluted.

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	CuZn	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	N						
11 1520	70	45		40	30	25	10	8									80	○	●	●			

Nominal k12	11A 11 1520	for workpiece ∅		L_{tot}	< 900 N f
	Centre drill HSS B				
mm		mm	mm	mm	mm/rev.
1	XXX	6 – 8	4	35	0.02
1,25	XXX	8 – 10	5	40	0.02
1,6	XXX	10 – 15	6.3	45	0.02
2	XXX	15 – 20	8	50	0.02
2,5	XXX	20 – 30	10	56	0.03
3,15	XXX	30 – 40	11.2	60	0.03
4	XXX	40 – 63	14	67	0.03
5	XXX	63 – 100	18	76	0.04

HSS | DIN 333 | Type B | k12 | 120°/60° | h7



Garant Centre drill with protective countersink, left-hand cutting

Ground from solid and relief-ground.
With additional centre protection (120° countersink angle), spiral fluted, **left-hand cutting.**

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	CuZn	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	N						
11 1540	70	45		40	30	25	10	8									80	○	●	●			

Nominal k12	11A 11 1540	for workpiece ∅		L_{tot}	< 900 N f
	Centre drill HSS B left hand				
mm		mm	mm	mm	mm/rev.
2,5	XXX	20 – 30	10	56	0.03
3,15	XXX	30 – 40	11.2	60	0.03
4	XXX	40 – 63	14	67	0.03
6,3	XXX	100 – 150	20	80	0.05

Standard | Type N | h6 | 90° | h6 DIN 1835 B

Garant

NC spotting drill plain shank

≥ Ø 6 mm with **drive flat to DIN 1835-B.**
Precision centred ground point with thin chisel edge - gives easy spot drilling and high accuracy of the centre hole form. Very sturdy due to short flutes.

11 2010/2060 – **High-performance NC spotting drill.**
Tool substrate made of sintered powder metallurgy **for applications** demanding high standards of tool life and accurate centring. Very good wear resistance in stainless steels.

Note:	Use speed for the actual hole Ø (not necessarily the speed for the drill outer Ø).

HSS E

11 2000

HSS E-PM

11 2010

HSS E

11 2020

HSS E-PM

11 2060

HSS E

11 2100

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	CuZn	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	M	M	S	K	N						
11 2000	70	45		40	30	25	10	8					12	8			80	●	●	●			
11 2010	80	50		45	33	28	12	10					14	10			88	●	●	●			
11 2020/2100	87	56	50	50	37	31	12	10					15	10	6	31	100	●	●	●			
11 2060	96	62	55	55	42	35	14	12					18	13	8	35	112	●	●	●			

Ø h6	11A 11 2000	11A 11 2010	11A 11 2020	11A 11 2060	11A 11 2100				
	NC spotting drill HSS-E	NC spotting drill HSS-E-PM	NC spotting drill HSS-E	NC spotting drill HSS-E-PM	NC spotting drill HSS-E				
			90° N						
mm			TiAlN	TiAlN	TiAlN	mm	L_{tot} 11 2000 11 2010 11 2020 11 2060 mm	L_{tot} 11 2100 mm	mm	< 900 N f mm/rev.
3	XXX	XXX	XXX	XXX	XXX	12	46	80	3	0.03
4	XXX	XXX	XXX	XXX	XXX	12	55	100	4	0.03
5	XXX	XXX	XXX	XXX	XXX	15	60	120	5	0.04
6	XXX	XXX	XXX	XXX	XXX	20	66	140	6	0.05
8	XXX	XXX	XXX	XXX	XXX	25	79	140	8	0.07
10	XXX	XXX	XXX	XXX	XXX	25	89	170	10	0.07
12	XXX	XXX	XXX	XXX	XXX	30	102	170	12	0.07
16	XXX	XXX	XXX	XXX	XXX	35	115	200	16	0.07
20	XXX	XXX	XXX	XXX	XXX	40	131	200	20	0.07

HSS E-PM | Standard | Type N | h6 | 90° | h6 DIN 1835 B

Garant

NC spotting drill sets

High-performance NC spotting drill.
Tool material of sintered powder metallurgy **for applications** demanding high standards of tool life and centring accuracy. Very good wear resistance in stainless steels.
Precision centred ground point with thin chisel edge - gives easy spot drilling and high accuracy of the centre hole form. Very sturdy due to short flutes.
With drive flats to DIN 1835-B.

Supplied with: 4-piece set of NC spotting drills in a plastic box.

Note:	Use speed for the actual hole Ø (not necessarily the speed for the drill outer Ø).

11 2105

11 2106

Type			6-12
11A 11 2105	NC spotting drill HSS-E-PM No. 112010 with plastic box **90°**		XXX
11A 11 2106	NC spotting drill HSS-E-PM No. 112060 with plastic box **90°**	TiAlN	XXX
Content: 1 each NC spotting drills			Size 6; 8; 10; 12.

HSS E | Standard | Type N | h6 | 120° | h6 DIN 1835 B

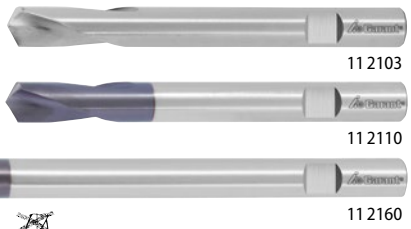
Garant

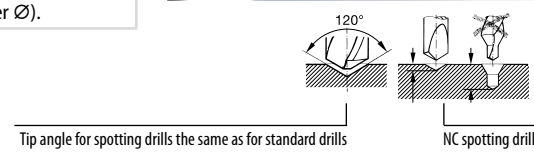
NC spotting drill plain shank

≥ Ø 6 mm with **drive flat to DIN 1835-B.**
Precision centred ground point with thin chisel edge - gives easy spot drilling and high accuracy of the centre hole form. Very sturdy due to short flutes.

Application: **Point angle 120°** so that the cutting edges of the following drill engage easily.

Note: Use speed for the actual hole Ø (not necessarily the speed for the drill outer Ø).





Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	CuZn	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	M	M	S	K	N						
11 2103	70	45		40	30	25	10	8					12	8			80	●	●	●			
11 2110/2160	87	56	50	50	37	31	12	10					15	10	6	31	100	●	●	●			

Ø h6	11A 11 2103	11A 11 2110	11A 11 2160					
	NC spotting drill HSS-E				L_{tot}		< 900 N f	
	120° N				11 2103 11 2110	11 2160		
mm		TiAlN	TiAlN	mm	mm	mm	mm	mm/rev.
3	XXX	XXX	–	12	46	–	3	0.03
4	XXX	XXX	XXX	12	55	100	4	0.03
5	XXX	XXX	XXX	15	60	120	5	0.04
6	XXX	XXX	XXX	20	66	140	6	0.05
8	XXX	XXX	XXX	25	79	140	8	0.07
10	XXX	XXX	XXX	25	89	170	10	0.07
12	XXX	XXX	XXX	30	102	170	12	0.07
16	XXX	XXX	XXX	35	115	200	16	0.07
20	XXX	XXX	–	40	131	–	20	0.07

HSS E | Standard | Type N | h6 | 142° | h6 DIN 1835 B

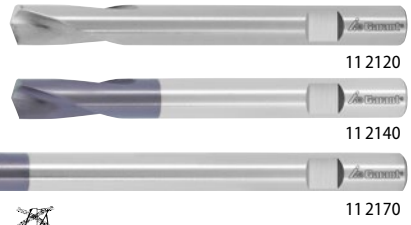
Garant

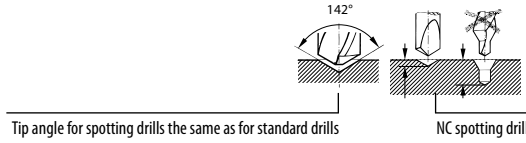
NC spotting drill plain shank

≥ Ø 6 mm with **drive flat to DIN 1835-B.**
Precision centred ground point with thin chisel edge - gives easy spot drilling and high accuracy of the centre hole form. Very sturdy due to short flutes.

Application: **Point angle 142°** so that the cutting edges of the following drill engage easily.

Note: Use speed for the actual hole Ø (not necessarily the speed for the drill outer Ø).





Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	CuZn	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	M	M	S	K	N						
11 2120	70	45		40	30	25	10	8					12	8			80	●	●	●			
11 2140/2170	87	56	50	50	37	31	12	10					15	10	6	31	100	●	●	●			

Ø h6	11A 11 2120	11A 11 2140	11A 11 2170						
	NC spotting drill HSS-E				L_{tot}		< 900 N f		
	142° N				11 2120 11 2140	11 2170		11 2120	11 2140 11 2170
mm		TiAlN	TiAlN	mm	mm	mm	mm	mm/rev.	mm/rev.
3	XXX	XXX	–	12	46	–	3	0.03	0.03
4	XXX	XXX	XXX	12	55	100	4	0.03	0.03
5	XXX	XXX	–	15	60	–	5	0.04	0.04
6	XXX	XXX	XXX	20	66	140	6	0.05	0.05
8	XXX	XXX	XXX	25	79	140	8	0.06	0.07
10	XXX	XXX	XXX	25	89	170	10	0.06	0.07
12	XXX	XXX	XXX	30	102	170	12	0.06	0.07
16	XXX	XXX	–	35	115	–	16	0.06	0.07

HSS E-PM | DIN 1899 A | Type N | 0 –0.004 | 118° | h8 | 2

Garant

Micro drill

Special drill with reinforced shank, high concentricity and precision ground point.

11 2300

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	CuZn	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	M	M	S	K	N						
11 2300	70	45	40	40	30	25	10	8					12	8	5	25	80	○	●	●			

Ø -0.004	11A 11 2300 Micro drill HSS-E-PM N		Usable length		L_{tot}		< 900 N f
mm			mm	mm	mm	mm	mm/rev.
0,15	XXX	10	0.8	1	25	1	0.006
0,20	XXX	5	1.5	1.8	25	1	0.007
0,25	XXX	5	1.9	2.2	25	1	0.009
0,30	XXX	5	1.9	2.2	25	1	0.011
0,35	XXX	5	2.4	2.8	25	1	0.011
0,40	XXX	5	3	3.6	25	1	0.011
0,45	XXX	5	3	3.6	25	1	0.011
0,50	XXX	5	3.4	4	25	1	0.014
0,55	XXX	5	3.9	4.5	25	1	0.014
0,60	XXX	5	3.9	4.5	25	1	0.014
0,65	XXX	5	4.2	5	25	1	0.02
0,70	XXX	5	4.8	5.6	25	1	0.02
0,75	XXX	5	4.8	5.6	25	1	0.02
0,80	XXX	5	5.3	6.3	25	1.5	0.024
0,85	XXX	5	5.3	6.3	25	1.5	0.024
0,90	XXX	5	6	7.1	25	1.5	0.024
0,95	XXX	5	6	7.1	25	1.5	0.024
1,00	XXX	5	6.8	8	25	1.5	0.041
1,05	XXX	5	6.8	8	25	1.5	0.041
1,10	XXX	5	7.6	9	25	1.5	0.041
1,15	XXX	5	7.6	9	25	1.5	0.041
1,20	XXX	5	8.5	10	25	1.5	0.041
1,25	XXX	5	8.5	10	25	1.5	0.041
1,30	XXX	5	8.5	10	25	1.5	0.041
1,35	XXX	5	9.5	11.2	25	1.5	0.041
1,40	XXX	5	9.5	11.2	25	1.5	0.041
1,45	XXX	5	9.5	11.2	25	1.5	0.041
1,50	XXX	5	9.5	11.2	30	2	0.052
1,55	XXX	5	10.6	12.4	30	2	0.052
1,60	XXX	5	10.6	12.4	30	2	0.052
1,70	XXX	5	10.6	12.4	30	2	0.052
1,80	XXX	5	10.8	13.8	30	2	0.052

HSS | DIN 1897 | Type N | h8 | 130° | 2

HOLEX CleverDrill jobber drill, plain shank

Sturdy drills for all standard applications. Improved spot drilling behaviour due to cross-ground form. Standard core thickness and core taper. Profile ground. Surface: Bronze-coloured tempered helical flutes.

≥ 3 mm

11 3005

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	CuZn					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	K	N					
11 3005	80	63	50	35	32	25											30	40	●	●			

Ø h8 mm	12B 11 3005 HOLEX CleverDrill HSS jobber drill		mm	L_{tot} mm	< 750 N f mm/rev.
2	XXX	10	12	38	0.05
2,1	XXX	10	12	38	0.05
2,2	XXX	10	13	40	0.05
2,3	XXX	10	13	40	0.05
2,4	XXX	10	14	43	0.05
2,5	XXX	10	14	43	0.05
2,6	XXX	10	14	43	0.05
2,7	XXX	10	16	46	0.05
2,8	XXX	10	16	46	0.05
2,9	XXX	10	16	46	0.05
3	XXX	10	16	46	0.05
3,1	XXX	10	18	49	0.05
3,2	XXX	10	18	49	0.05
3,3	XXX	10	18	49	0.05
3,4	XXX	10	20	52	0.05
3,5	XXX	10	20	52	0.05
3,6	XXX	10	20	52	0.05
3,7	XXX	10	20	52	0.05
3,8	XXX	10	22	55	0.05
3,9	XXX	10	22	55	0.05
4	XXX	10	22	55	0.05
4,1	XXX	10	22	55	0.05
4,2	XXX	10	22	55	0.05
4,3	XXX	10	24	58	0.05
4,4	XXX	10	24	58	0.05
4,5	XXX	10	24	58	0.05
4,6	XXX	10	24	58	0.05
4,7	XXX	10	24	58	0.05
4,8	XXX	10	26	62	0.05
4,9	XXX	10	26	62	0.05
5	XXX	10	26	62	0.08
5,1	XXX	10	26	62	0.08
5,2	XXX	10	26	62	0.08
5,3	XXX	10	26	62	0.08
5,4	XXX	10	28	66	0.08
5,5	XXX	10	28	66	0.08
5,6	XXX	10	28	66	0.08
5,7	XXX	10	28	66	0.08
5,8	XXX	10	28	66	0.08
5,9	XXX	10	28	66	0.08
6	XXX	10	28	66	0.08
6,1	XXX	10	31	70	0.08
6,2	XXX	10	31	70	0.08
6,3	XXX	10	31	70	0.08
6,4	XXX	10	31	70	0.08
6,5	XXX	10	31	70	0.08
6,6	XXX	10	31	70	0.08
6,7	XXX	10	31	70	0.08
6,8	XXX	10	34	74	0.08
6,9	XXX	10	34	74	0.08
7	XXX	10	34	74	0.08
7,1	XXX	10	34	74	0.08

Ø h8 mm	12B 11 3005 HOLEX CleverDrill HSS jobber drill		mm	L_{tot} mm	< 750 N f mm/rev.
7,2	XXX	10	34	74	0.08
7,3	XXX	10	34	74	0.08
7,4	XXX	10	34	74	0.08
7,5	XXX	10	34	74	0.08
7,6	XXX	5	37	79	0.08
7,7	XXX	5	37	79	0.08
7,8	XXX	5	37	79	0.08
7,9	XXX	5	37	79	0.08
8	XXX	5	37	79	0.1
8,1	XXX	5	37	79	0.1
8,2	XXX	5	37	79	0.1
8,3	XXX	5	37	79	0.1
8,4	XXX	5	37	79	0.1
8,5	XXX	5	37	79	0.1
8,6	XXX	5	40	84	0.1
8,7	XXX	5	40	84	0.1
8,8	XXX	5	40	84	0.1
8,9	XXX	5	40	84	0.1
9	XXX	5	40	84	0.1
9,1	XXX	5	40	84	0.1
9,2	XXX	5	40	84	0.1
9,3	XXX	5	40	84	0.1
9,4	XXX	5	40	84	0.1
9,5	XXX	5	40	84	0.1
9,6	XXX	5	43	89	0.1
9,7	XXX	5	43	89	0.1
9,8	XXX	5	43	89	0.1
9,9	XXX	5	43	89	0.1
10	XXX	5	43	89	0.1
10,2	XXX	5	43	89	0.1
10,5	XXX	5	43	89	0.1
11	XXX	5	47	95	0.1
11,5	XXX	5	47	95	0.1
11,8	XXX	5	47	95	0.1
12	XXX	5	51	102	0.16
12,5	XXX	5	51	102	0.16
13	XXX	5	51	102	0.16
13,5	XXX	5	54	107	0.16
13,8	XXX	5	54	107	0.16
14	XXX	5	54	107	0.16
14,5	XXX	5	56	111	0.16
15	XXX	5	56	111	0.16
15,5	XXX	5	58	115	0.16
16	XXX	1	58	115	0.2
16,5	XXX	1	60	119	0.2
17	XXX	1	60	119	0.2
17,5	XXX	1	62	123	0.2
18	XXX	1	62	123	0.2
18,5	XXX	1	64	127	0.2
19	XXX	1	64	127	0.2
19,5	XXX	1	66	131	0.2
20	XXX	1	66	131	0.2

DIN 1897 | Type FS | h8 | 38° | 2

≤ 3.9 mm | ≥ 4 mm

11 3020

HSS E | 135°

11 3140

HSS Co8 | 130°

Garant

Stub drill plain shank

Particularly **robust and strong** due to **strengthened core.**
Ground flutes, with high concentricity.

11 3020 – Bright finish flutes, nitrided lands.

Advantage: **Ideal for drilling shallow holes (approx. 2 - 4×D)** on NC machines and automatic machines.

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	K						
11 3020	70	45		40	30												25	○	●	●			
11 3140	87	56	50	50	35	30	12							15	10	6		○	●	●			

∅ h8	11B 11 3020 Stub drill HSS-E FS TiAlN	11B 11 3140 Stub drill HSS-Co8 FS TiAlN		mm	L_{tot} mm	< 750 N f mm/rev.
1	XXX	XXX	10	6	26	0.03
1,1	XXX	XXX	10	7	28	0.03
1,2	XXX	XXX	10	8	30	0.03
1,3	XXX	XXX	10	8	30	0.03
1,4	XXX	XXX	10	9	32	0.03
1,5	XXX	XXX	10	9	32	0.03
1,6	XXX	XXX	10	10	34	0.03
1,7	XXX	XXX	10	10	34	0.03
1,8	XXX	XXX	10	11	36	0.03
1,9	XXX	XXX	10	11	36	0.03
2	XXX	XXX	10	12	38	0.03
2,1	XXX	XXX	10	12	38	0.03
2,2	XXX	XXX	10	13	40	0.03
2,3	XXX	XXX	10	13	40	0.03
2,4	XXX	XXX	10	14	43	0.03
2,5	XXX	XXX	10	14	43	0.03
2,6	XXX	XXX	10	14	43	0.03
2,7	XXX	XXX	10	16	46	0.03
2,8	XXX	XXX	10	16	46	0.03
2,9	XXX	XXX	10	16	46	0.03
3	XXX	XXX	10	16	46	0.03
3,1	XXX	XXX	10	18	49	0.03
3,2	XXX	XXX	10	18	49	0.03
3,3	XXX	XXX	10	18	49	0.03
3,4	XXX	XXX	10	20	52	0.03
3,5	XXX	XXX	10	20	52	0.03
3,6	XXX	XXX	10	20	52	0.03
3,7	XXX	XXX	10	20	52	0.03
3,8	XXX	XXX	10	22	55	0.03
3,9	XXX	XXX	10	22	55	0.03
4	XXX	XXX	10	22	55	0.05
4,1	XXX	XXX	10	22	55	0.05
4,2	XXX	XXX	10	22	55	0.05
4,3	XXX	XXX	10	24	58	0.05
4,4	XXX	XXX	10	24	58	0.05
4,5	XXX	XXX	10	24	58	0.05
4,6	XXX	XXX	10	24	58	0.05
4,65	XXX	–	10	24	58	0.05
4,7	XXX	XXX	10	24	58	0.05
4,8	XXX	XXX	10	26	62	0.05
4,9	XXX	XXX	10	26	62	0.05
5	XXX	XXX	10	26	62	0.05
5,1	XXX	XXX	10	26	62	0.05
5,2	XXX	XXX	10	26	62	0.05
5,3	XXX	XXX	10	26	62	0.05
5,4	XXX	XXX	10	28	66	0.05
5,5	XXX	XXX	10	28	66	0.05
5,55	XXX	XXX	10	28	66	0.05
5,6	XXX	XXX	10	28	66	0.05
5,7	XXX	XXX	10	28	66	0.05
5,8	XXX	XXX	10	28	66	0.05
5,9	XXX	XXX	10	28	66	0.05
6	XXX	XXX	10	28	66	0.07
6,1	XXX	XXX	10	31	70	0.07
6,2	XXX	XXX	10	31	70	0.07
6,3	XXX	XXX	10	31	70	0.07
6,4	XXX	XXX	10	31	70	0.07
6,5	XXX	XXX	10	31	70	0.07
6,6	XXX	XXX	10	31	70	0.07
6,7	XXX	XXX	10	31	70	0.07
6,8	XXX	XXX	10	34	74	0.07
6,9	XXX	XXX	10	34	74	0.07
7	XXX	XXX	10	34	74	0.07
7,1	XXX	XXX	10	34	74	0.07
7,2	XXX	XXX	10	34	74	0.07

∅ h8	11B 11 3020 Stub drill HSS-E FS TiAlN	11B 11 3140 Stub drill HSS-Co8 FS TiAlN		mm	L_{tot} mm	< 750 N f mm/rev.
7,3	XXX	XXX	10	34	74	0.07
7,4	XXX	–	10	34	74	0.07
7,45	XXX	–	10	34	74	0.07
7,5	XXX	XXX	10	34	74	0.07
7,6	XXX	–	5	37	79	0.07
7,7	XXX	XXX	5	37	79	0.07
7,8	XXX	XXX	5	37	79	0.07
7,9	XXX	XXX	5	37	79	0.07
8	XXX	XXX	5	37	79	0.1
8,1	XXX	XXX	5	37	79	0.1
8,2	XXX	XXX	5	37	79	0.1
8,3	XXX	XXX	5	37	79	0.1
8,4	XXX	XXX	5	37	79	0.1
8,5	XXX	XXX	5	37	79	0.1
8,6	XXX	XXX	5	40	84	0.1
8,7	XXX	XXX	5	40	84	0.1
8,8	XXX	XXX	5	40	84	0.1
8,9	XXX	–	5	40	84	0.1
9	XXX	XXX	5	40	84	0.1
9,1	XXX	XXX	5	40	84	0.1
9,2	XXX	XXX	5	40	84	0.1
9,25	XXX	–	5	40	84	0.1
9,3	XXX	XXX	5	40	84	0.1
9,4	XXX	XXX	5	40	84	0.1
9,5	XXX	XXX	5	40	84	0.1
9,6	XXX	–	5	43	89	0.1
9,7	XXX	–	5	43	89	0.1
9,8	XXX	XXX	5	43	89	0.1
9,9	XXX	XXX	5	43	89	0.1
10	XXX	XXX	5	43	89	0.1
10,1	XXX	–	5	43	89	0.1
10,2	XXX	XXX	5	43	89	0.1
10,3	XXX	–	5	43	89	0.1
10,5	XXX	–	5	43	89	0.1
10,8	XXX	–	5	47	95	0.1
11	XXX	XXX	5	47	95	0.1
11,2	XXX	–	5	47	95	0.1
11,3	XXX	–	5	47	95	0.1
11,5	XXX	XXX	5	47	95	0.1
11,8	XXX	XXX	5	47	95	0.1
12	XXX	XXX	5	51	102	0.16
12,5	XXX	–	5	51	102	0.16
12,8	XXX	–	5	51	102	0.16
13	XXX	–	5	51	102	0.16
13,3	XXX	–	5	54	107	0.16
13,5	XXX	–	5	54	107	0.16
13,8	XXX	–	5	54	107	0.16
14	XXX	–	5	54	107	0.16
14,5	XXX	–	5	56	111	0.16
14,8	XXX	–	5	56	111	0.16
15	XXX	–	5	56	111	0.16
15,3	XXX	–	5	58	115	0.16
15,5	XXX	–	5	58	115	0.16
15,75	XXX	–	5	58	115	0.16
16	XXX	–	1	58	115	0.2
16,5	XXX	–	1	60	119	0.2
17	XXX	–	1	60	119	0.2
17,5	XXX	–	1	62	123	0.2
17,75	XXX	–	1	62	123	0.2
18	XXX	–	1	62	123	0.2
18,5	XXX	–	1	64	127	0.2
19	XXX	–	1	64	127	0.2
19,5	XXX	–	1	66	131	0.2
19,75	XXX	–	1	66	131	0.2
20	XXX	–	1	66	131	0.2

HSS E	DIN 1897	Type N	h8	130°		2

Garant Stub drill plain shank

Particularly robust and strong due to strengthened core.
Ground flutes, with high concentricity.

11 3150 – Bright finish.

Advantage: **Ideal for drilling shallow holes (approx. 2 - 4×D)** on NC machines and automatic machines.

Recommendation: **Maximum drilling depth:** flute length (see table) less 1.5×nominal Ø.

≥ 2.4 mm

11 3150

≥ 2.4 mm

11 3230

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	CuZn	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	M	M	S	K	N						
11 3150	80	45	50	40	30	25	10	8					12	8	5	25	80	●	●	●			
11 3230				50	37	31	12	10					15	10	6	31	100	●	●	●			

Ø h8	11B 11 3150	11B 11 3230			L_{tot}	< 900 N f
	Stub drill HSS-E N					
mm		TiN		mm	mm	mm/rev.
1	XXX	XXX	10	6	26	0.03
1,1	XXX	XXX	10	7	28	0.03
1,2	XXX	XXX	10	8	30	0.03
1,3	XXX	XXX	10	8	30	0.03
1,4	XXX	XXX	10	9	32	0.03
1,5	XXX	XXX	10	9	32	0.03
1,6	XXX	XXX	10	10	34	0.03
1,7	XXX	XXX	10	10	34	0.03
1,8	XXX	XXX	10	11	36	0.03
1,85	–	XXX	10	11	36	0.03
1,9	XXX	XXX	10	11	36	0.03
2	XXX	XXX	10	12	38	0.03
2,1	XXX	XXX	10	12	38	0.03
2,2	XXX	XXX	10	13	40	0.03
2,3	XXX	XXX	10	13	40	0.03
2,4	XXX	XXX	10	14	43	0.03
2,5	XXX	XXX	10	14	43	0.03
2,6	XXX	XXX	10	14	43	0.03
2,7	XXX	XXX	10	16	46	0.03
2,8	XXX	XXX	10	16	46	0.03
2,9	XXX	XXX	10	16	46	0.03
3	XXX	XXX	10	16	46	0.03
3,1	XXX	XXX	10	18	49	0.03
3,2	XXX	XXX	10	18	49	0.03
3,3	XXX	XXX	10	18	49	0.03
3,4	XXX	XXX	10	20	52	0.03
3,5	XXX	XXX	10	20	52	0.03
3,6	XXX	XXX	10	20	52	0.03
3,7	XXX	XXX	10	20	52	0.03
3,8	XXX	XXX	10	22	55	0.03
3,9	XXX	XXX	10	22	55	0.03
4	XXX	XXX	10	22	55	0.05
4,1	XXX	XXX	10	22	55	0.05
4,2	XXX	XXX	10	22	55	0.05
4,3	XXX	XXX	10	24	58	0.05
4,4	XXX	XXX	10	24	58	0.05
4,5	XXX	XXX	10	24	58	0.05
4,6	XXX	XXX	10	24	58	0.05
4,65	XXX	XXX	10	24	58	0.05
4,7	XXX	XXX	10	24	58	0.05
4,8	XXX	XXX	10	26	62	0.05
4,9	XXX	XXX	10	26	62	0.05
5	XXX	XXX	10	26	62	0.05
5,1	XXX	XXX	10	26	62	0.05
5,2	XXX	XXX	10	26	62	0.05
5,3	XXX	XXX	10	26	62	0.05
5,4	XXX	XXX	10	28	66	0.05
5,5	XXX	XXX	10	28	66	0.05
5,55	XXX	XXX	10	28	66	0.05
5,6	XXX	XXX	10	28	66	0.05
5,7	XXX	XXX	10	28	66	0.05
5,8	XXX	XXX	10	28	66	0.05
5,9	XXX	XXX	10	28	66	0.05
6	XXX	XXX	10	28	66	0.07
6,1	XXX	XXX	10	31	70	0.07
6,2	XXX	XXX	10	31	70	0.07
6,3	XXX	XXX	10	31	70	0.07
6,4	XXX	XXX	10	31	70	0.07
6,5	XXX	XXX	10	31	70	0.07
6,6	XXX	XXX	10	31	70	0.07
6,7	XXX	XXX	10	31	70	0.07

Ø h8	11B 11 3150	11B 11 3230			L_{tot}	< 900 N f
	Stub drill HSS-E N					
mm		TiN		mm	mm	mm/rev.
6,8	XXX	XXX	10	34	74	0.07
6,9	XXX	XXX	10	34	74	0.07
7	XXX	XXX	10	34	74	0.07
7,1	XXX	XXX	10	34	74	0.07
7,2	XXX	XXX	10	34	74	0.07
7,3	XXX	XXX	10	34	74	0.07
7,4	XXX	XXX	10	34	74	0.07
7,45	XXX	XXX	10	34	74	0.07
7,5	XXX	XXX	10	34	74	0.07
7,6	XXX	XXX	5	37	79	0.07
7,7	XXX	XXX	5	37	79	0.07
7,8	XXX	XXX	5	37	79	0.07
7,9	XXX	XXX	5	37	79	0.07
8	XXX	XXX	5	37	79	0.1
8,1	XXX	XXX	5	37	79	0.1
8,2	XXX	XXX	5	37	79	0.1
8,3	XXX	XXX	5	37	79	0.1
8,4	XXX	XXX	5	37	79	0.1
8,5	XXX	XXX	5	37	79	0.1
8,6	XXX	XXX	5	40	84	0.1
8,7	XXX	XXX	5	40	84	0.1
8,8	XXX	XXX	5	40	84	0.1
8,9	XXX	XXX	5	40	84	0.1
9	XXX	XXX	5	40	84	0.1
9,1	XXX	XXX	5	40	84	0.1
9,2	XXX	XXX	5	40	84	0.1
9,25	XXX	XXX	5	40	84	0.1
9,3	XXX	XXX	5	40	84	0.1
9,4	XXX	XXX	5	40	84	0.1
9,5	XXX	XXX	5	40	84	0.1
9,6	XXX	XXX	5	43	89	0.1
9,7	XXX	XXX	5	43	89	0.1
9,8	XXX	XXX	5	43	89	0.1
9,9	XXX	XXX	5	43	89	0.1
10	XXX	XXX	5	43	89	0.1
10,2	XXX	XXX	5	43	89	0.1
10,5	XXX	XXX	5	43	89	0.1
11	XXX	XXX	5	47	95	0.1
11,5	XXX	XXX	5	47	95	0.1
11,8	XXX	XXX	5	47	95	0.1
12	XXX	XXX	5	51	102	0.16
12,5	XXX	XXX	5	51	102	0.16
13	XXX	XXX	5	51	102	0.16
13,5	XXX	XXX	5	54	107	0.16
13,8	XXX	XXX	5	54	107	0.16
14	XXX	XXX	5	54	107	0.16
14,5	XXX	XXX	5	56	111	0.16
15	XXX	XXX	5	56	111	0.16
15,5	XXX	XXX	5	58	115	0.16
15,75	XXX	XXX	5	58	115	0.16
16	XXX	XXX	1	58	115	0.2
16,5	XXX	XXX	1	60	119	0.2
17	XXX	XXX	1	60	119	0.2
17,5	XXX	XXX	1	62	123	0.2
17,75	XXX	XXX	1	62	123	0.2
18	XXX	XXX	1	62	123	0.2
18,5	XXX	XXX	1	64	127	0.2
19	XXX	XXX	1	64	127	0.2
19,5	XXX	XXX	1	66	131	0.2
19,75	XXX	XXX	1	66	131	0.2
20	XXX	XXX	1	66	131	0.2

DIN 1897 | h8 | 2

Garant High performance stub drills

11 3280 – Tool made of sintered **powder metallurgy HSS** for heavy duty applications. Ground flutes with high concentricity. Generous flute profile.

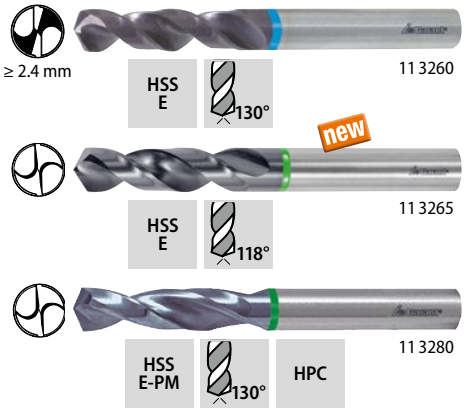
11 3260/3265 – **High concentricity** and **special chip flutes** ensure precise bores.

Advantage:

11 3280 – Can be used at increased cutting data.

11 3260/3265 – **Ideal for drilling shallow holes (approx. 2 - 4×D)** on NC machines and automatic machines.

Recommendation: Maximum drilling depth:
flute length (see table) less 1.5×nominal Ø.



Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	CuZn	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	M	M	S	K	N						
11 3260		56		50	37	31	12						17	13	6		100		●	●			
11 3265	75	65	60	50	40	35	16						17	13	8	40	50	●	●	●			
11 3280	80	70	60		50	40	25	14					20	15	12	50	60	○	●	●			

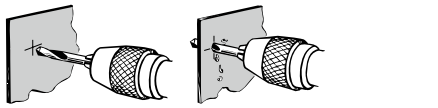
∅ h8	11B 11 3260	11B 11 3265	11B 11 3280			L_{tot}
	Stub drill HSS-E		Stub drill HSS-E-PM HPC			
mm	TiAlN	TiAlN	TiAlN		mm	mm
1	XXX	XXX	–	10	6	26
1,1	XXX	XXX	–	10	7	28
1,2	XXX	XXX	–	10	8	30
1,3	XXX	XXX	–	10	8	30
1,4	XXX	XXX	–	10	9	32
1,5	XXX	XXX	–	10	9	32
1,6	XXX	XXX	–	10	10	34
1,7	XXX	XXX	–	10	10	34
1,8	XXX	XXX	–	10	11	36
1,9	XXX	XXX	–	10	11	36
2	XXX	XXX	XXX	10	12	38
2,1	XXX	XXX	XXX	10	12	38
2,2	XXX	XXX	XXX	10	13	40
2,3	XXX	XXX	XXX	10	13	40
2,4	XXX	XXX	XXX	10	14	43
2,5	XXX	XXX	XXX	10	14	43
2,6	XXX	XXX	XXX	10	14	43
2,7	XXX	XXX	–	10	16	46
2,8	XXX	XXX	XXX	10	16	46
2,9	XXX	XXX	–	10	16	46
3	XXX	XXX	XXX	10	16	46
3,1	XXX	XXX	–	10	18	49
3,2	XXX	XXX	XXX	10	18	49
3,3	XXX	XXX	XXX	10	18	49
3,4	XXX	XXX	XXX	10	20	52
3,5	XXX	XXX	XXX	10	20	52
3,6	XXX	XXX	–	10	20	52
3,7	XXX	XXX	XXX	10	20	52
3,8	XXX	XXX	–	10	22	55
3,9	XXX	XXX	–	10	22	55
4	XXX	XXX	XXX	10	22	55
4,1	XXX	XXX	–	10	22	55
4,2	XXX	XXX	XXX	10	22	55
4,3	XXX	XXX	XXX	10	24	58
4,4	XXX	XXX	–	10	24	58
4,5	XXX	XXX	XXX	10	24	58
4,6	XXX	XXX	XXX	10	24	58
4,65	XXX	–	–	10	24	58
4,7	XXX	XXX	–	10	24	58
4,8	XXX	XXX	XXX	10	26	62
4,9	XXX	XXX	–	10	26	62
5	XXX	XXX	XXX	10	26	62
5,1	XXX	XXX	XXX	10	26	62
5,2	XXX	XXX	XXX	10	26	62
5,3	XXX	XXX	–	10	26	62
5,4	XXX	XXX	–	10	28	66
5,5	XXX	XXX	XXX	10	28	66
5,55	XXX	–	–	10	28	66
5,6	XXX	XXX	–	10	28	66
5,7	XXX	XXX	–	10	28	66
5,8	XXX	XXX	XXX	10	28	66
5,9	XXX	XXX	–	10	28	66
6	XXX	XXX	XXX	10	28	66
6,1	XXX	XXX	–	10	31	70
6,2	XXX	XXX	–	10	31	70

∅ h8	11B 11 3260	11B 11 3265	11B 11 3280			L_{tot}
	Stub drill HSS-E		Stub drill HSS-E-PM HPC			
mm	TiAlN	TiAlN	TiAlN		mm	mm
6,3	XXX	XXX	–	10	31	70
6,4	XXX	XXX	–	10	31	70
6,5	XXX	XXX	XXX	10	31	70
6,6	XXX	XXX	–	10	31	70
6,7	XXX	XXX	–	10	31	70
6,8	XXX	XXX	XXX	10	34	74
6,9	XXX	XXX	XXX	10	34	74
7	XXX	XXX	XXX	10	34	74
7,1	XXX	XXX	–	10	34	74
7,2	XXX	XXX	–	10	34	74
7,3	XXX	XXX	–	10	34	74
7,4	XXX	XXX	–	10	34	74
7,45	XXX	–	–	10	34	74
7,5	XXX	XXX	XXX	10	34	74
7,6	XXX	XXX	–	5	37	79
7,7	XXX	XXX	–	5	37	79
7,8	XXX	XXX	XXX	5	37	79
7,9	XXX	XXX	–	5	37	79
8	XXX	XXX	XXX	5	37	79
8,1	XXX	XXX	–	5	37	79
8,2	XXX	XXX	–	5	37	79
8,3	XXX	XXX	–	5	37	79
8,4	XXX	XXX	–	5	37	79
8,5	XXX	XXX	XXX	5	37	79
8,6	XXX	XXX	XXX	5	40	84
8,7	XXX	XXX	–	5	40	84
8,8	XXX	XXX	XXX	5	40	84
8,9	XXX	XXX	–	5	40	84
9	XXX	XXX	XXX	5	40	84
9,1	XXX	XXX	–	5	40	84
9,2	XXX	XXX	–	5	40	84
9,25	XXX	–	–	5	40	84
9,3	XXX	XXX	XXX	5	40	84
9,4	XXX	XXX	–	5	40	84
9,5	XXX	XXX	XXX	5	40	84
9,6	XXX	XXX	–	5	43	89
9,7	XXX	XXX	–	5	43	89
9,8	XXX	XXX	XXX	5	43	89
9,9	XXX	XXX	–	5	43	89
10	XXX	XXX	XXX	5	43	89
10,1	–	XXX	–	5	43	89
10,2	XXX	XXX	XXX	5	43	89
10,3	XXX	XXX	XXX	5	43	89
10,4	–	XXX	–	5	43	89
10,5	XXX	XXX	XXX	5	43	89
11	XXX	XXX	XXX	5	47	95
11,2	–	XXX	XXX	5	47	95
11,5	XXX	XXX	XXX	5	47	95
11,8	XXX	XXX	XXX	5	47	95
12	XXX	XXX	XXX	5	51	102
12,1	XXX	–	XXX	5	51	102
12,3	–	XXX	–	5	51	102
12,5	XXX	XXX	–	5	51	102
12,7	–	XXX	–	5	51	102
13	XXX	XXX	–	5	51	102

HSS | DIN 1897 | h8 | 135° | 2

HOLEX Sheet metal drill plain shank

Extremely break-resistant due to short helix and strong core taper. Self-centring point. **Cylindrically ground on circumference**(without chamfers) to prevent jamming.
Vaporised surface.
Dimensions similar to DIN 1897.
Application: **Especially for drilling sheet metal.**



Drill positioning without centre punching. *No material deformation due to easy drilling without pressure.*

11 3341

11 3421

	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	Graphite GRP CRP	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	N						
11 3341/3421	○	○		●	○																	●	

∅ h8	12B 11 3341	12B 11 3421			
	Sheet metal drill HSS				
mm	single-sided	double-sided		mm	L_{tot} mm
2,5	XXX	–	10	10	43
3	XXX	XXX	10	11	46
3,1	XXX	XXX	10	12	49
3,2	XXX	XXX	10	12	49
3,3	XXX	XXX	10	12	49
3,5	XXX	XXX	10	13	52
4	XXX	XXX	10	14	55
4,1	XXX	XXX	10	14	55
4,2	XXX	XXX	10	14	55
4,5	–	XXX	10	16	58
4,8	XXX	–	10	17	62

∅ h8	12B 11 3341	12B 11 3421			
	Sheet metal drill HSS				
mm	single-sided	double-sided		mm	L_{tot} mm
4,9	XXX	–	10	17	62
5	XXX	XXX	10	17	62
5,1	XXX	–	10	17	62
5,2	XXX	–	10	17	62
5,7	XXX	–	10	19	66
6	XXX	XXX	10	19	66
6,4	XXX	–	10	21	70
6,8	XXX	XXX	10	23	72
7,2	XXX	–	5	24	74
8,1	XXX	–	5	25	79
9,6	XXX	–	5	25	89

Sets of stub drills DIN 1897 in a case

DIN 1897 | h8

Type				1-10
12B 11 3510	HOLEX	HOLEX Clever Drill stub drill set HSS No. 113005, type N in a case		XXX
11B 11 3520	Garant	Stub drill set HSS-E No. 113020, type FS with case		XXX
11B 11 3540	Garant	Stub drill set HSS-Co8 No. 113140, type FS with case	TiAlN	XXX
Drill range			mm	1 – 10
Number of drills				19
Incremental steps of drills			mm	0.5

HSS | Type N | 130°
HSS E | Type FS | 135°
HSS Co8 | Type FS | 130°

11 3510

HSS E | DIN 1897 | Type N | h8 | 130°

Type				1-10	1-10,5	1-13
11B 11 3730	Garant	Stub drill set HSS-E No. 113150, type N as a refill set, without case		XXX	XXX	XXX
11B 11 3740	Garant	Stub drill set HSS-E No. 113230, type N with case	TiN	XXX	–	–
Drill range			mm	1 – 10	1 – 10.5	1 – 13
Number of drills				19	24	121
Tapping hole ∅			mm	–	10.2; 3.3; 4.2; 6.8	–
Incremental steps of drills			mm	0.5	0.5	0.1

HSS E | DIN 1897 | h8

Type				1-10		
11B 11 3760		Stub drill set HSS-E No. 113260, with case		XXX		130°
11B 11 3780	Garant	Stub drill set HSS-E No. 113265, with case	TiAlN	XXX	new	118°
11B 11 3790		Stub drill set HSS-E No. 113265, refill set without a case	TiAlN	XXX	new	118°
Drill range			mm	1 – 10		
Number of drills				19		
Incremental steps of drills			mm	0.5		

Empty case suitable for stub drills to DIN 1897

Type			1-10
12B 11 3825	HOLEX	Empty case for stub drills to DIN 1897	XXX
11B 11 3830	Garant		XXX
for drills		mm	1 – 10
for number of drills			19
Incremental steps of drills		mm	0.5

11 3830

HSS E | DIN 1897 | Type N | h8 | 2

Garant Stub drill, plain shank with 3 clamping faces

Stable and sturdy stub drill with **strengthened core diameter.** Ground flutes, with high concentricity. Precision ground point. Three **drive flats on the shank** for use in a 3-jaw chuck.

Recommendation: Maximum drilling depth:
flute length (see table) less 1.5×nominal ∅.

Note:
Size 1–3,5 – Drills with plain shank, **without drive flats.**
Size 13,5–16 – Shank ∅ 9.5 mm with 3 drive flats.
Size 17–20 – Shank ∅ 12.5 mm with 3 drive flats.

11 3001

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	GG(G)	CuZn	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	K	N						
11 3001	70	45	40	40	30	25	10	8						12	8	25	80	●	●	●			

∅ h8	11B 11 3001 Stub drill with 3 clamping faces HSS-E			L_{tot}	< 900 N f
mm			mm	mm	mm/rev.
1	XXX	10	6	26	0.03
1,5	XXX	10	9	32	0.03
1,6	XXX	10	10	34	0.03
2	XXX	10	12	38	0.03
2,5	XXX	10	14	43	0.03
3	XXX	10	16	46	0.03
3,3	XXX	10	18	49	0.03
3,5	XXX	10	20	52	0.03
4	XXX	10	22	55	0.05
4,2	XXX	10	22	55	0.05
4,5	XXX	10	24	58	0.05
5	XXX	10	26	62	0.05
5,5	XXX	10	28	66	0.05
6	XXX	10	28	66	0.07
6,5	XXX	10	31	70	0.07
6,8	XXX	10	34	74	0.07
7	XXX	10	34	74	0.07
7,5	XXX	10	34	74	0.07
8	XXX	5	37	79	0.1
8,5	XXX	5	37	79	0.1

∅ h8	11B 11 3001 Stub drill with 3 clamping faces HSS-E			L_{tot}	< 900 N f
mm			mm	mm	mm/rev.
9	XXX	5	40	84	0.1
9,5	XXX	5	40	84	0.1
10	XXX	5	43	89	0.1
10,2	XXX	5	43	89	0.1
10,5	XXX	5	43	89	0.1
11	XXX	5	47	95	0.1
11,5	XXX	5	47	95	0.1
12	XXX	5	51	102	0.16
12,5	XXX	5	51	102	0.16
13	XXX	5	51	102	0.16
13,5	XXX	1	54	107	0.16
14	XXX	1	54	107	0.16
14,5	XXX	1	56	111	0.16
15	XXX	1	56	111	0.16
15,5	XXX	1	56	111	0.16
16	XXX	1	58	115	0.2
17	XXX	1	60	119	0.2
18	XXX	1	62	123	0.2
19	XXX	1	64	127	0.2
20	XXX	1	66	131	0.2

HSS E | DIN 1897 | Type N | h8 | 130°

Garant Stub drill set, plain shank with 3 clamping faces

Composed of jobber drills DIN 1897.

Note: ∅ 1 - 3.5 mm: Drills with plain shank, **without drive flats.**

Type		1-10
11B 11 3010	Stub drill set HSS-E No. 113001 with case	XXX
Drill range	mm	1 – 10
Number of drills		19
Incremental steps of drills	mm	0.5

11 3010

HSS E | DIN 338 | Type N | h8 | 2

Jobber drill, plain shank with 3 clamping faces

130° ≤ 16 mm | 135° ≥ 17 mm

Particularly sturdy and robust due to the **strengthened core diameter.** Ground flutes, with high concentricity. Precision ground point. Three **drive flats on the shank** for use in a 3-jaw chuck.

Recommendation: Maximum drilling depth:
flute length (see table) less 1.5×nominal ∅.

Note:
Size 1–3,5 – Drills with plain shank, **without drive flats**
Size 13,5–16 – Shank ∅ 9.5 mm with 3 drive flats.
Size 17–20 – Shank ∅ 12.5 mm with 3 drive flats.

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	GG(G)	CuZn	Uni
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	K	N	
11 4001	70	45	40	40	30	25	10	8						12	8	25	80	●

∅ h8 mm	11B 11 4001 Jobber drill with 3 clamping faces HSS-E		mm	L_{tot} mm	< 900 N f mm/rev.
1	XXX	5	12	34	0.03
1,5	XXX	5	18	40	0.03
1,6	XXX	5	20	43	0.03
2	XXX	5	24	49	0.03
2,5	XXX	5	30	57	0.03
3	XXX	10	33	61	0.03
3,2	XXX	10	36	65	0.03
3,3	XXX	10	36	65	0.03
3,5	XXX	10	39	70	0.03
4	XXX	10	43	75	0.05
4,2	XXX	10	43	75	0.05
4,5	XXX	10	47	80	0.05
5	XXX	10	52	86	0.05
5,2	XXX	10	52	86	0.05
5,5	XXX	10	57	93	0.05
6	XXX	10	57	93	0.07
6,5	XXX	10	63	101	0.07
6,8	XXX	10	69	109	0.07
7	XXX	10	69	109	0.07
7,5	XXX	10	69	109	0.07
8	XXX	5	75	117	0.1

∅ h8 mm	11B 11 4001 Jobber drill with 3 clamping faces HSS-E		mm	L_{tot} mm	< 900 N f mm/rev.
8,5	XXX	5	75	117	0.1
9	XXX	5	81	125	0.1
9,5	XXX	5	81	125	0.1
10	XXX	5	87	133	0.1
10,2	XXX	5	87	133	0.1
10,5	XXX	5	87	133	0.1
11	XXX	5	94	142	0.1
11,5	XXX	5	94	142	0.1
12	XXX	5	101	151	0.16
12,5	XXX	5	101	151	0.16
13	XXX	5	101	151	0.16
13,5	XXX	1	108	160	0.16
14	XXX	1	108	160	0.16
14,5	XXX	1	114	169	0.16
15	XXX	1	114	169	0.16
15,5	XXX	1	120	178	0.16
16	XXX	1	120	178	0.2
17	XXX	1	125	184	0.2
18	XXX	1	130	191	0.2
19	XXX	1	135	198	0.2
20	XXX	1	140	205	0.2

HSS E | DIN 338 | Type N | h8 | 130° | 2

Jobber drill set, plain shank with 3 clamping faces

Composed of jobber drills DIN 338.
Additionally with intermediate sizes for tapping drill holes ∅ 1.6; 3.3; 4.2; 6.8; and 10.2 mm.

Note: ∅ 1 - 3.5 mm: Drills with plain shank, **without drive flats.**

11 4010

Type		1-10,5
11B 11 4010	Jobber drill set HSS-E No. 114001 with case	XXX
Drill range	mm	1 – 10.5
Number of drills		24
Tapping hole ∅	mm	1.6; 10.2; 3.3; 4.2; 6.8
Incremental steps of drills	mm	0.5

HSS | Type N | h8 | 118° | 2

HOLEX Jobber drills, plain shank

Roll forged, standard helix angle, core thickness and core taper.
Dimensions to DIN 338.

11 4000 – No interruption in the material structure, so the drill is more resilient and suitable for arduous drilling tasks (e. g. with hand held drills). Economy version.

11 4020 – Robust jobber drill with strengthened core and small chisel point for easy spot drilling and accurate centring of the designated hole. **Precision roll forged flutes.**

Note:

11 4020 – Size 14-20: Shank ∅ 13 mm with 3 drive flats.

11 4000

11 4020

Precision roll forged (11 4020):
The profile is forged in a chipless process, the guide chamfers are additionally ground.

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	K						
11 4000		45		40	30	25											25		●	●		○	
11 4020		45		40	30	25											25	○	●	●			

∅ h8	12B 11 4000 rolled N	12B 11 4020 Precision roll forged N		mm	L_{tot} mm	< 750 N f mm/rev.
	HSS jobber drill					
mm						
1	XXX	XXX	5	12	34	0.03
1,1	XXX	XXX	5	14	36	0.03
1,2	XXX	XXX	5	16	38	0.03
1,3	XXX	XXX	5	16	38	0.03
1,4	XXX	XXX	5	18	40	0.03
1,5	XXX	XXX	5	18	40	0.03
1,6	XXX	XXX	5	20	43	0.03
1,7	XXX	XXX	5	20	43	0.03
1,8	XXX	XXX	5	22	46	0.03
1,9	XXX	XXX	5	22	46	0.03
2	XXX	XXX	5	24	49	0.03
2,1	XXX	XXX	5	24	49	0.03
2,2	XXX	XXX	5	27	53	0.03
2,3	XXX	XXX	5	27	53	0.03
2,4	XXX	XXX	5	30	57	0.03
2,5	XXX	XXX	5	30	57	0.03
2,6	XXX	XXX	5	30	57	0.03
2,7	XXX	XXX	5	33	61	0.03
2,8	XXX	XXX	5	33	61	0.03
2,9	XXX	XXX	5	33	61	0.03
3	XXX	XXX	10	33	61	0.03
3,1	XXX	XXX	10	36	65	0.03
3,2	XXX	XXX	10	36	65	0.03
3,3	XXX	XXX	10	36	65	0.03
3,4	XXX	XXX	10	39	70	0.03
3,5	XXX	XXX	10	39	70	0.03
3,6	XXX	XXX	10	39	70	0.03
3,7	XXX	XXX	10	39	70	0.03
3,8	XXX	XXX	10	43	75	0.03
3,9	XXX	XXX	10	43	75	0.03
4	XXX	XXX	10	43	75	0.05
4,1	XXX	XXX	10	43	75	0.05
4,2	XXX	XXX	10	43	75	0.05
4,3	XXX	XXX	10	47	80	0.05
4,4	XXX	XXX	10	47	80	0.05
4,5	XXX	XXX	10	47	80	0.05
4,6	XXX	XXX	10	47	80	0.05
4,7	XXX	XXX	10	47	80	0.05
4,8	XXX	XXX	10	52	86	0.05
4,9	XXX	XXX	10	52	86	0.05
5	XXX	XXX	10	52	86	0.05
5,1	XXX	XXX	10	52	86	0.05
5,2	XXX	XXX	10	52	86	0.05
5,3	XXX	XXX	10	52	86	0.05
5,4	XXX	XXX	10	57	93	0.05
5,5	XXX	XXX	10	57	93	0.05
5,6	XXX	XXX	10	57	93	0.05
5,7	XXX	XXX	10	57	93	0.05
5,8	XXX	XXX	10	57	93	0.05
5,9	XXX	XXX	10	57	93	0.05
6	XXX	XXX	10	57	93	0.07
6,1	XXX	XXX	10	63	101	0.07
6,2	XXX	XXX	10	63	101	0.07
6,3	XXX	XXX	10	63	101	0.07

∅ h8	12B 11 4000 rolled N	12B 11 4020 Precision roll forged N		mm	L_{tot} mm	< 750 N f mm/rev.
	HSS jobber drill					
mm						
6,4	XXX	XXX	10	63	101	0.07
6,5	XXX	XXX	10	63	101	0.07
6,6	XXX	XXX	10	63	101	0.07
6,7	XXX	XXX	10	63	101	0.07
6,8	XXX	XXX	10	69	109	0.07
6,9	XXX	XXX	10	69	109	0.07
7	XXX	XXX	10	69	109	0.07
7,1	XXX	XXX	10	69	109	0.07
7,2	XXX	XXX	10	69	109	0.07
7,3	XXX	XXX	10	69	109	0.07
7,4	XXX	XXX	10	69	109	0.07
7,5	XXX	XXX	10	69	109	0.07
7,6	XXX	XXX	5	75	117	0.07
7,7	XXX	XXX	5	75	117	0.07
7,8	XXX	XXX	5	75	117	0.07
7,9	XXX	XXX	5	75	117	0.07
8	XXX	XXX	5	75	117	0.1
8,1	XXX	XXX	5	75	117	0.1
8,2	XXX	XXX	5	75	117	0.1
8,3	XXX	XXX	5	75	117	0.1
8,4	XXX	XXX	5	75	117	0.1
8,5	XXX	XXX	5	75	117	0.1
8,6	XXX	XXX	5	81	125	0.1
8,7	XXX	XXX	5	81	125	0.1
8,8	XXX	XXX	5	81	125	0.1
8,9	XXX	XXX	5	81	125	0.1
9	XXX	XXX	5	81	125	0.1
9,1	XXX	XXX	5	81	125	0.1
9,2	XXX	XXX	5	81	125	0.1
9,3	XXX	XXX	5	81	125	0.1
9,4	XXX	XXX	5	81	125	0.1
9,5	XXX	XXX	5	81	125	0.1
9,6	XXX	XXX	5	87	133	0.1
9,7	XXX	XXX	5	87	133	0.1
9,8	XXX	XXX	5	87	133	0.1
9,9	XXX	XXX	5	87	133	0.1
10	XXX	XXX	5	87	133	0.1
10,2	XXX	XXX	5	87	133	0.1
10,5	XXX	XXX	5	87	133	0.1
10,8	XXX	XXX	5	94	142	0.1
11	XXX	XXX	5	94	142	0.1
11,2	XXX	XXX	5	94	142	0.1
11,5	XXX	XXX	5	94	142	0.1
11,8	XXX	XXX	5	94	142	0.1
12	XXX	XXX	5	101	151	0.16
12,2	XXX	XXX	5	101	151	0.16
12,5	XXX	XXX	5	101	151	0.16
12,8	XXX	XXX	5	101	151	0.16
13	XXX	XXX	5	101	151	0.16
14	–	XXX	1	108	160	0.16
15	–	XXX	1	114	169	0.16
16	–	XXX	1	120	178	0.2
18	–	XXX	1	130	191	0.2
20	–	XXX	1	140	205	0.2

HSS | DIN 338 | Type N | h8 | 2

Jobber drills, plain shank

11 4030 – **HOLEX CleverDrill:** Sturdy drills for all standard applications. Improved spot drilling behaviour due to cross-ground form. Standard core thickness and core taper. Profile ground. Surface: Bronze-coloured tempered helical flutes.

11 4150 – Profile ground: Jobber drill with high pitch accuracy and concentricity as well as precision ground point. Steam tempered from Ø 2.4 mm.

Note:

11 4030 – **Successor product for No. 114050 and No. 114160.** Size 13.2 – 20: With stepped shank Ø 12.7 mm.

11 4150 – Size 16 - 20: Drills with shank Ø 16 mm.

≥ 3 mm

11 4030

≥ 4 mm

11 4150

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	CuZn
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	K	N
11 4030	80	60	50	**35**	**32**	**22**	18										30	**40**
11 4150	80	45	50	**40**	**30**	**25**	10	8									**25**	**80**

Ø h8	12B 11 4030 HOLEX HOLEX CleverDrill HSS jobber drill	11B 11 4150 Garant HSS jobber drill		Inch Ø ≙		L_{tot}	< 750 N f
mm or inch	N	N		mm	mm	mm	mm/rev.
0,2	XXX	XXX	5	–	2.5	19	0.03
0,25	–	XXX	5	–	3	19	0.03
0,3	XXX	XXX	5	–	3	19	0.03
0,35	XXX	XXX	5	–	4	19	0.03
0,4	XXX	XXX	5	–	5	20	0.03
1/64	–	XXX	5	0.4	5	20	0.03
0,45	XXX	XXX	5	–	5	20	0.03
0,5	XXX	XXX	5	–	6	22	0.03
0,55	XXX	XXX	5	–	7	24	0.03
0,6	XXX	XXX	5	–	7	24	0.03
0,65	XXX	XXX	5	–	8	26	0.03
0,7	XXX	XXX	5	–	9	28	0.03
0,75	XXX	XXX	5	–	9	28	0.03
1/32	–	XXX	5	0.79	10	30	0.03
0,8	XXX	XXX	5	–	10	30	0.03
0,85	XXX	XXX	5	–	10	30	0.03
0,9	XXX	XXX	5	–	11	32	0.03
0,95	XXX	XXX	5	–	11	32	0.03
1	XXX	XXX	5	–	12	34	0.03
1,05	XXX	XXX	5	–	12	34	0.03
1,1	XXX	XXX	5	–	14	36	0.03
1,15	XXX	XXX	5	–	14	36	0.03
3/64	–	XXX	5	1.19	16	38	0.03
1,2	XXX	XXX	5	–	16	38	0.03
1,25	XXX	XXX	5	–	16	38	0.03
1,3	XXX	XXX	5	–	16	38	0.03
1,35	XXX	XXX	5	–	18	40	0.03
1,4	XXX	XXX	5	–	18	40	0.03
1,45	XXX	XXX	5	–	18	40	0.03
1,5	XXX	XXX	5	–	18	40	0.03
1,55	XXX	XXX	5	–	20	43	0.03
1/16	–	XXX	5	1.59	20	43	0.03
1,6	XXX	XXX	5	–	20	43	0.03
1,65	XXX	XXX	5	–	20	43	0.03
1,7	XXX	XXX	5	–	20	43	0.03
1,75	XXX	XXX	5	–	22	46	0.03
1,8	XXX	XXX	5	–	22	46	0.03
1,85	XXX	XXX	5	–	22	46	0.03
1,9	XXX	XXX	5	–	22	46	0.03
1,95	XXX	XXX	5	–	24	49	0.03
5/64	–	XXX	5	1.98	24	49	0.03
2	XXX	XXX	5	–	24	49	0.03
2,05	XXX	XXX	5	–	24	49	0.03
2,1	XXX	XXX	5	–	24	49	0.03

Ø h8	12B 11 4030 HOLEX HOLEX CleverDrill HSS jobber drill	11B 11 4150 Garant HSS jobber drill		Inch Ø ≙		L_{tot}	< 750 N f
mm or inch	N	N		mm	mm	mm	mm/rev.
2,15	XXX	XXX	5	–	27	53	0.03
2,2	XXX	XXX	5	–	27	53	0.03
2,3	XXX	XXX	5	–	27	53	0.03
3/32	–	XXX	5	2.38	30	57	0.03
2,4	XXX	XXX	5	–	30	57	0.03
2,5	XXX	XXX	5	–	30	57	0.03
2,6	XXX	XXX	5	–	30	57	0.03
2,7	XXX	XXX	5	–	33	61	0.03
7/64	–	XXX	5	2.78	33	61	0.03
2,8	XXX	XXX	5	–	33	61	0.03
2,9	XXX	XXX	5	–	33	61	0.03
3	XXX	XXX	10	–	33	61	0.03
3,1	XXX	XXX	10	–	36	65	0.03
1/8	–	XXX	10	3.17	36	65	0.03
3,2	XXX	XXX	10	–	36	65	0.03
3,25	XXX	XXX	10	–	36	65	0.03
3,3	XXX	XXX	10	–	36	65	0.03
3,4	XXX	XXX	10	–	39	70	0.03
3,5	XXX	XXX	10	–	39	70	0.03
9/64	–	XXX	10	3.57	39	70	0.03
3,6	XXX	XXX	10	–	39	70	0.03
3,7	XXX	XXX	10	–	39	70	0.03
3,8	XXX	XXX	10	–	43	75	0.03
3,9	XXX	XXX	10	–	43	75	0.03
5/32	–	XXX	10	3.97	43	75	0.03
4	XXX	XXX	10	–	43	75	0.05
4,1	XXX	XXX	10	–	43	75	0.05
4,2	XXX	XXX	10	–	43	75	0.05
4,3	XXX	XXX	10	–	47	80	0.05
11/64	–	XXX	10	4.37	47	80	0.05
4,4	XXX	XXX	10	–	47	80	0.05
4,5	XXX	XXX	10	–	47	80	0.05
4,6	XXX	XXX	10	–	47	80	0.05
4,65	XXX	XXX	10	–	47	80	0.05
4,7	XXX	XXX	10	–	47	80	0.05
3/16	–	XXX	10	4.76	52	86	0.05
4,8	XXX	XXX	10	–	52	86	0.05
4,9	XXX	XXX	10	–	52	86	0.05
5	XXX	XXX	10	–	52	86	0.05
5,1	XXX	XXX	10	–	52	86	0.05
13/64	–	XXX	10	5.16	52	86	0.05
5,2	XXX	XXX	10	–	52	86	0.05
5,3	XXX	XXX	10	–	52	86	0.05
5,4	XXX	XXX	10	–	57	93	0.05

Ø h8	12B 11 4030 HOLEX HOLEX CleverDrill HSS jobber drill	11B 11 4150 Garant HSS jobber drill		Inch Ø ≙		L_{tot}	< 750 N f
mm or inch	N	N		mm	mm	mm	mm/rev.
5,5	XXX	XXX	10	–	57	93	0.05
5,55	XXX	XXX	10	–	57	93	0.05
7/32	–	XXX	10	5.56	57	93	0.05
5,6	XXX	XXX	10	–	57	93	0.05
5,65	–	XXX	10	–	57	93	0.05
5,7	XXX	XXX	10	–	57	93	0.05
5,8	XXX	XXX	10	–	57	93	0.05
5,9	XXX	XXX	10	–	57	93	0.05
15/64	–	XXX	10	5.95	57	93	0.07
6	XXX	XXX	10	–	57	93	0.07
6,1	XXX	XXX	10	–	63	101	0.07
6,2	XXX	XXX	10	–	63	101	0.07
6,3	XXX	XXX	10	–	63	101	0.07
1/4	–	XXX	10	6.35	63	101	0.07
6,4	XXX	XXX	10	–	63	101	0.07
6,5	XXX	XXX	10	–	63	101	0.07
6,6	XXX	XXX	10	–	63	101	0.07
6,7	XXX	XXX	10	–	63	101	0.07
6,75	–	XXX	10	–	69	109	0.07
17/64	–	XXX	10	6.75	69	109	0.07
6,8	XXX	XXX	10	–	69	109	0.07
6,9	XXX	XXX	10	–	69	109	0.07
7	XXX	XXX	10	–	69	109	0.07
7,1	XXX	XXX	10	–	69	109	0.07
9/32	–	XXX	10	7.14	69	109	0.07
7,2	XXX	XXX	10	–	69	109	0.07
7,3	XXX	XXX	10	–	69	109	0.07
7,4	XXX	XXX	10	–	69	109	0.07
7,45	XXX	XXX	10	–	69	109	0.07
7,5	XXX	XXX	10	–	69	109	0.07
19/64	–	XXX	10	7.54	75	117	0.07
7,55	–	XXX	10	–	75	117	0.07
7,6	XXX	XXX	5	–	75	117	0.07
7,7	XXX	XXX	5	–	75	117	0.07
7,8	XXX	XXX	5	–	75	117	0.07
7,9	XXX	XXX	5	–	75	117	0.07
5/16	–	XXX	5	7.94	75	117	0.07
8	XXX	XXX	5	–	75	117	0.1
8,1	XXX	XXX	5	–	75	117	0.1
8,2	XXX	XXX	5	–	75	117	0.1
8,3	XXX	XXX	5	–	75	117	0.1
21/64	–	XXX	5	8.33	75	117	0.1
8,4	XXX	XXX	5	–	75	117	0.1
8,5	XXX	XXX	5	–	75	117	0.1
8,6	XXX	XXX	5	–	81	125	0.1
8,7	XXX	XXX	5	–	81	125	0.1
11/32	–	XXX	5	8.73	81	125	0.1
8,8	XXX	XXX	5	–	81	125	0.1
8,9	XXX	XXX	5	–	81	125	0.1
9	XXX	XXX	5	–	81	125	0.1
9,1	XXX	XXX	5	–	81	125	0.1
23/64	–	XXX	5	9.13	81	125	0.1
9,2	XXX	XXX	5	–	81	125	0.1
9,25	XXX	XXX	5	–	81	125	0.1
9,3	XXX	XXX	5	–	81	125	0.1
9,4	XXX	XXX	5	–	81	125	0.1
9,5	XXX	XXX	5	–	81	125	0.1
3/8	–	XXX	5	9.52	87	133	0.1
9,55	–	XXX	5	–	87	133	0.1
9,6	XXX	XXX	5	–	87	133	0.1
9,7	XXX	XXX	5	–	87	133	0.1
9,8	XXX	XXX	5	–	87	133	0.1
9,9	XXX	XXX	5	–	87	133	0.1
25/64	–	XXX	5	9.92	87	133	0.1
10	XXX	XXX	5	–	87	133	0.1
10,1	XXX	XXX	5	–	87	133	0.1
10,2	XXX	XXX	5	–	87	133	0.1
10,25	–	XXX	5	–	87	133	0.1
10,3	XXX	XXX	5	–	87	133	0.1
13/32	–	XXX	5	10.32	87	133	0.1

Ø h8	12B 11 4030 HOLEX HOLEX CleverDrill HSS jobber drill	11B 11 4150 Garant HSS jobber drill		Inch Ø ≙		L_{tot}	< 750 N f
mm or inch	N	N		mm	mm	mm	mm/rev.
10,4	XXX	XXX	5	–	87	133	0.1
10,5	XXX	XXX	5	–	87	133	0.1
10,6	XXX	XXX	5	–	87	133	0.1
10,7	XXX	XXX	5	–	94	142	0.1
27/64	–	XXX	5	10.72	94	142	0.1
10,8	XXX	XXX	5	–	94	142	0.1
10,9	XXX	XXX	5	–	94	142	0.1
11	XXX	XXX	5	–	94	142	0.1
11,1	XXX	XXX	5	–	94	142	0.1
7/16	–	XXX	5	11.11	94	142	0.1
11,2	XXX	XXX	5	–	94	142	0.1
11,3	XXX	XXX	5	–	94	142	0.1
11,35	–	XXX	5	–	94	142	0.1
11,4	XXX	XXX	5	–	94	142	0.1
11,5	XXX	XXX	5	–	94	142	0.1
29/64	–	XXX	5	11.51	94	142	0.1
11,55	–	XXX	5	–	94	142	0.1
11,6	XXX	XXX	5	–	94	142	0.1
11,7	XXX	XXX	5	–	94	142	0.1
11,8	XXX	XXX	5	–	94	142	0.1
11,9	XXX	XXX	5	–	101	151	0.1
15/32	–	XXX	5	11.91	101	151	0.1
12	XXX	XXX	5	–	101	151	0.16
12,2	XXX	XXX	5	–	101	151	0.16
31/64	–	XXX	5	12.3	101	151	0.16
12,5	XXX	XXX	5	–	101	151	0.16
1/2	–	XXX	5	12.7	101	151	0.16
12,8	XXX	XXX	5	–	101	151	0.16
13	XXX	XXX	5	–	101	151	0.16
33/64	–	XXX	1	13.1	101	151	0.16
13,2	XXX	XXX	1	–	101	151	0.16
17/32	–	XXX	1	13.49	108	160	0.16
13,5	XXX	XXX	1	–	108	160	0.16
13,8	XXX	XXX	1	–	108	160	0.16
35/64	–	XXX	1	13.89	108	160	0.16
14	XXX	XXX	1	–	108	160	0.16
9/16	–	XXX	1	14.29	114	169	0.16
14,5	XXX	XXX	1	–	114	169	0.16
37/64	–	XXX	1	14.68	114	169	0.16
14,75	XXX	XXX	1	–	114	169	0.16
15	XXX	XXX	1	–	114	169	0.16
19/32	–	XXX	1	15.08	120	178	0.16
15,1	–	XXX	1	–	120	178	0.16
15,25	XXX	XXX	1	–	120	178	0.16
15,35	–	XXX	1	–	120	178	0.16
39/64	–	XXX	1	15.48	120	178	0.16
15,5	XXX	XXX	1	–	120	178	0.16
15,75	XXX	XXX	1	–	120	178	0.16
5/8	–	XXX	1	15.87	120	178	0.16
16	XXX	XXX	1	–	120	178	0.2
41/64	–	XXX	1	16.27	125	184	0.2
16,5	XXX	XXX	1	–	125	184	0.2
21/32	–	XXX	1	16.67	125	184	0.2
17	XXX	XXX	1	–	125	184	0.2
43/64	–	XXX	1	17.07	130	191	0.2
17,35	–	XXX	1	–	130	191	0.2
11/16	–	XXX	1	17.46	130	191	0.2
17,5	XXX	XXX	1	–	130	191	0.2
45/64	–	XXX	1	17.86	130	191	0.2
18	XXX	XXX	1	–	130	191	0.2
23/32	–	XXX	1	18.26	135	198	0.2
18,5	XXX	XXX	1	–	135	198	0.2
47/64	–	XXX	1	18.65	135	198	0.2
19	XXX	XXX	1	–	135	198	0.2
3/4	–	XXX	1	19.05	140	205	0.2
19,35	–	XXX	1	–	140	205	0.2
19,5	XXX	XXX	1	–	140	205	0.2
25/32	–	XXX	1	19.84	140	205	0.2
20	XXX	XXX	1	–	140	205	0.2

HSS | DIN 338 | h8 | 35-40° | 2

Jobber drills, plain shank

Standard core without core taper.
Precision ground point.

11 4200 – Ground flute with high helix.
Bright ground surface finish.

11 4360 – **Profile ground:**
High concentricity and pitch accuracy, drills for series production use.

≥ 2 mm

Type W 130°

11 4200

≥ 2.4 mm

Type N 118°

11 4360

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	CuZn					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	K	N					
11 4200	70	45	40																●	●			
11 4360		56	50	50	37	31	12	10						15	10	6	31	80	●	●			

Ø h8	11B 11 4200 Garant	12B 11 4360 HOLEX						Ø h8	11B 11 4200 Garant	12B 11 4360 HOLEX					
	HSS jobber drill				Alu plastics	< 500 N			HSS jobber drill				Alu plastics	< 500 N	
	W	N TiN			f	f			W	N TiN			f	f	
mm				mm	mm	11 4200 mm/rev.	11 4360 mm/rev.	mm				mm	mm	11 4200 mm/rev.	11 4360 mm/rev.
0,9	XXX	–	5	11	32	0.05	–	6,4	XXX	XXX	10	63	101	0.14	0.13
1	XXX	XXX	5	12	34	0.05	0.05	6,5	XXX	XXX	10	63	101	0.14	0.13
1,1	XXX	XXX	5	14	36	0.05	0.05	6,6	XXX	XXX	10	63	101	0.14	0.13
1,2	XXX	XXX	5	16	38	0.05	0.05	6,7	XXX	XXX	10	63	101	0.14	0.13
1,3	XXX	XXX	5	16	38	0.05	0.05	6,8	XXX	XXX	10	69	109	0.14	0.13
1,4	XXX	XXX	5	16	38	0.05	0.05	6,9	XXX	XXX	10	69	109	0.14	0.13
1,5	XXX	XXX	5	18	40	0.05	0.05	7	XXX	XXX	10	69	109	0.14	0.13
1,6	XXX	XXX	5	20	43	0.05	0.05	7,1	XXX	XXX	10	69	109	0.14	0.13
1,7	XXX	XXX	5	20	43	0.05	0.05	7,2	XXX	XXX	10	69	109	0.14	0.13
1,8	XXX	XXX	5	22	46	0.05	0.05	7,3	XXX	XXX	10	69	109	0.14	0.13
1,9	XXX	XXX	5	22	46	0.05	0.05	7,4	XXX	XXX	10	69	109	0.14	0.13
2	XXX	XXX	5	24	49	0.05	0.05	7,5	XXX	XXX	10	69	109	0.14	0.13
2,1	XXX	XXX	5	24	49	0.05	0.05	7,6	XXX	XXX	5	75	117	0.14	0.13
2,2	XXX	XXX	5	27	57	0.05	0.05	7,7	XXX	XXX	5	75	117	0.14	0.13
2,3	XXX	XXX	5	27	57	0.05	0.05	7,8	XXX	XXX	5	75	117	0.14	0.13
2,4	XXX	XXX	5	30	57	0.05	0.05	7,9	XXX	XXX	5	75	117	0.14	0.13
2,5	XXX	XXX	5	30	57	0.05	0.05	8	XXX	XXX	5	75	117	0.18	0.16
2,6	XXX	XXX	5	30	57	0.05	0.05	8,1	XXX	XXX	5	75	117	0.18	0.16
2,7	XXX	XXX	5	33	61	0.05	0.05	8,2	XXX	XXX	5	75	117	0.18	0.16
2,8	XXX	XXX	5	33	61	0.05	0.05	8,3	XXX	XXX	5	75	117	0.18	0.16
2,9	XXX	XXX	5	33	61	0.05	0.05	8,4	XXX	XXX	5	75	117	0.18	0.16
3	XXX	XXX	10	33	61	0.05	0.05	8,5	XXX	XXX	5	75	117	0.18	0.16
3,1	XXX	XXX	10	36	65	0.05	0.05	8,6	XXX	XXX	5	81	125	0.18	0.16
3,2	XXX	XXX	10	36	65	0.05	0.05	8,7	XXX	XXX	5	81	125	0.18	0.16
3,3	XXX	XXX	10	36	65	0.05	0.05	8,8	XXX	XXX	5	81	125	0.18	0.16
3,4	XXX	XXX	10	39	70	0.05	0.05	8,9	XXX	XXX	5	81	125	0.18	0.16
3,5	XXX	XXX	10	39	70	0.05	0.05	9	XXX	XXX	5	81	125	0.18	0.16
3,6	XXX	XXX	10	39	70	0.05	0.05	9,1	XXX	XXX	5	81	125	0.18	0.16
3,7	XXX	XXX	10	39	70	0.05	0.05	9,2	XXX	XXX	5	81	125	0.18	0.16
3,8	XXX	XXX	10	43	75	0.05	0.05	9,3	XXX	XXX	5	81	125	0.18	0.16
3,9	XXX	XXX	10	43	75	0.05	0.05	9,4	XXX	XXX	5	81	125	0.18	0.16
4	XXX	XXX	10	43	75	0.05	0.09	9,5	XXX	XXX	5	81	125	0.18	0.16
4,1	XXX	XXX	10	43	75	0.05	0.09	9,6	XXX	XXX	5	87	133	0.18	0.16
4,2	XXX	XXX	10	43	75	0.05	0.09	9,7	XXX	XXX	5	87	133	0.18	0.16
4,3	XXX	XXX	10	47	80	0.05	0.09	9,8	XXX	XXX	5	87	133	0.18	0.16
4,4	XXX	XXX	10	47	80	0.05	0.09	9,9	XXX	XXX	5	87	133	0.18	0.16
4,5	XXX	XXX	10	47	80	0.05	0.09	10	XXX	XXX	5	87	133	0.18	0.16
4,6	XXX	XXX	10	47	80	0.05	0.09	10,1	–	XXX	5	87	133	–	0.16
4,7	XXX	XXX	10	47	80	0.05	0.09	10,2	XXX	XXX	5	87	133	0.18	0.16
4,8	XXX	XXX	10	52	86	0.05	0.09	10,5	XXX	XXX	5	87	133	0.18	0.16
4,9	XXX	XXX	10	52	86	0.05	0.09	10,8	–	XXX	5	94	142	–	0.16
5	XXX	XXX	10	52	86	0.14	0.09	11	XXX	XXX	5	94	142	0.18	0.16
5,1	XXX	XXX	10	56	86	0.14	0.09	11,2	–	XXX	5	94	142	–	0.16
5,2	XXX	XXX	10	56	86	0.14	0.09	11,5	XXX	XXX	5	94	142	0.18	0.16
5,3	XXX	XXX	10	56	86	0.14	0.09	11,8	–	XXX	5	94	142	–	0.16
5,4	XXX	XXX	10	57	93	0.14	0.09	12	XXX	XXX	5	101	151	0.22	0.2
5,5	XXX	XXX	10	57	93	0.14	0.09	12,2	–	XXX	5	101	151	–	0.2
5,6	XXX	XXX	10	57	93	0.14	0.09	12,5	XXX	XXX	5	101	151	0.22	0.2
5,7	XXX	XXX	10	57	93	0.14	0.09	12,8	–	XXX	5	101	151	–	0.2
5,8	XXX	XXX	10	57	93	0.14	0.09	13	XXX	XXX	5	101	151	0.22	0.2
5,9	XXX	XXX	10	57	93	0.14	0.09	14	–	XXX	1	108	160	–	0.2
6	XXX	XXX	10	57	93	0.14	0.13	14,5	–	XXX	1	114	169	–	0.2
6,1	XXX	XXX	10	63	101	0.14	0.13	15	–	XXX	1	114	169	–	0.2
6,2	XXX	XXX	10	63	101	0.14	0.13	15,5	–	XXX	1	120	178	–	0.2
6,3	XXX	XXX	10	63	101	0.14	0.13	16	–	XXX	1	120	178	–	0.25

HSS E | DIN 338 | Type N | h8 | 2

Jobber drills, plain shank

Profile ground: this ensures high concentricity and pitch accuracy. Precision ground point. Drill for production use.

11 4400 – **Reinforced core**, bright finish.

Recommendation: Maximum drilling depth:
flute length (see table) less 1.5×nominal ∅.

≥ 2 mm

11 4400

≥ 2 mm

11 4405

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	TOOLOX® 33 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	CuZn	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	M	M	S	K	N						
11 4400				40	30	25	10	8				8	12	8	5	25	80	●	●	●			
11 4405				35	28	22	8	6					8					○	●	●			

∅ h8	11B 11 4400 Garant®	12B 11 4405 HOLEX®				< 900 N
	Jobber drill HSS-E				L_{tot}	f
mm				mm	mm	mm/rev.
1	XXX	XXX	5	12	34	0.03
1,1	XXX	XXX	5	14	36	0.03
1,2	XXX	XXX	5	16	38	0.03
1,3	XXX	XXX	5	16	38	0.03
1,4	XXX	XXX	5	18	40	0.03
1,5	XXX	XXX	5	18	40	0.03
1,6	XXX	XXX	5	20	43	0.03
1,7	XXX	XXX	5	20	43	0.03
1,8	XXX	XXX	5	22	46	0.03
1,9	XXX	XXX	5	22	46	0.03
2	XXX	XXX	5	24	49	0.03
2,1	XXX	XXX	5	24	49	0.03
2,2	XXX	XXX	5	27	53	0.03
2,3	XXX	XXX	5	27	53	0.03
2,4	XXX	XXX	5	30	57	0.03
2,5	XXX	XXX	5	30	57	0.03
2,6	XXX	XXX	5	30	57	0.03
2,7	XXX	XXX	5	33	61	0.03
2,8	XXX	XXX	5	33	61	0.03
2,9	XXX	XXX	5	33	61	0.03
3	XXX	XXX	10	33	61	0.03
3,1	XXX	XXX	10	36	65	0.03
3,2	XXX	XXX	10	36	65	0.03
3,3	XXX	XXX	10	36	65	0.03
3,4	XXX	XXX	10	39	70	0.03
3,5	XXX	XXX	10	39	70	0.03
3,6	XXX	XXX	10	39	70	0.03
3,7	XXX	XXX	10	39	70	0.03
3,8	XXX	XXX	10	43	75	0.03
3,9	XXX	XXX	10	43	75	0.03
4	XXX	XXX	10	43	75	0.05
4,1	XXX	XXX	10	43	75	0.05
4,2	XXX	XXX	10	43	75	0.05
4,3	XXX	XXX	10	47	80	0.05
4,4	XXX	XXX	10	47	80	0.05
4,5	XXX	XXX	10	47	80	0.05
4,6	XXX	XXX	10	47	80	0.05
4,7	XXX	XXX	10	47	80	0.05
4,8	XXX	XXX	10	52	86	0.05
4,9	XXX	XXX	10	52	86	0.05
5	XXX	XXX	10	52	86	0.05
5,1	XXX	XXX	10	52	86	0.05
5,2	XXX	XXX	10	52	86	0.05
5,3	XXX	XXX	10	52	86	0.05
5,4	XXX	XXX	10	57	93	0.05
5,5	XXX	XXX	10	57	93	0.05
5,6	XXX	XXX	10	57	93	0.05
5,7	XXX	XXX	10	57	93	0.05
5,8	XXX	XXX	10	57	93	0.05
5,9	XXX	XXX	10	57	93	0.05
6	XXX	XXX	10	57	93	0.07
6,1	XXX	XXX	10	63	101	0.07
6,2	XXX	XXX	10	63	101	0.07
6,3	XXX	XXX	10	63	101	0.07
6,4	XXX	XXX	10	63	101	0.07
6,5	XXX	XXX	10	63	101	0.07

∅ h8	11B 11 4400 Garant®	12B 11 4405 HOLEX®				< 900 N
	Jobber drill HSS-E				L_{tot}	f
mm				mm	mm	mm/rev.
6,6	XXX	XXX	10	63	101	0.07
6,7	XXX	XXX	10	63	101	0.07
6,8	XXX	XXX	10	69	109	0.07
6,9	XXX	XXX	10	69	109	0.07
7	XXX	XXX	10	69	109	0.07
7,1	XXX	XXX	10	69	109	0.07
7,2	XXX	XXX	10	69	109	0.07
7,3	XXX	XXX	10	69	109	0.07
7,4	XXX	XXX	10	69	109	0.07
7,5	XXX	XXX	10	69	109	0.07
7,6	XXX	XXX	5	75	117	0.07
7,7	XXX	XXX	5	75	117	0.07
7,8	XXX	XXX	5	75	117	0.07
7,9	XXX	XXX	5	75	117	0.07
8	XXX	XXX	5	75	117	0.1
8,1	XXX	XXX	5	75	117	0.1
8,2	XXX	XXX	5	75	117	0.1
8,3	XXX	XXX	5	75	117	0.1
8,4	XXX	XXX	5	75	117	0.1
8,5	XXX	XXX	5	75	117	0.1
8,6	XXX	XXX	5	81	125	0.1
8,7	XXX	XXX	5	81	125	0.1
8,8	XXX	XXX	5	81	125	0.1
8,9	XXX	XXX	5	81	125	0.1
9	XXX	XXX	5	81	125	0.1
9,1	XXX	XXX	5	81	125	0.1
9,2	XXX	XXX	5	81	125	0.1
9,3	XXX	XXX	5	81	125	0.1
9,4	XXX	XXX	5	81	125	0.1
9,5	XXX	XXX	5	81	125	0.1
9,6	XXX	XXX	5	87	133	0.1
9,7	XXX	XXX	5	87	133	0.1
9,8	XXX	XXX	5	87	133	0.1
9,9	XXX	XXX	5	87	133	0.1
10	XXX	XXX	5	87	133	0.1
10,1	XXX	XXX	5	87	133	0.1
10,2	XXX	XXX	5	87	133	0.1
10,3	XXX	–	5	87	133	0.1
10,5	XXX	XXX	5	87	133	0.1
10,8	XXX	XXX	5	94	142	0.1
11	XXX	XXX	5	94	142	0.1
11,2	XXX	XXX	5	94	142	0.1
11,5	XXX	XXX	5	94	142	0.1
11,8	XXX	XXX	5	94	142	0.1
12	XXX	XXX	5	101	151	0.16
12,1	XXX	–	5	101	151	0.16
12,2	XXX	XXX	5	101	151	0.16
12,5	XXX	XXX	5	101	151	0.16
12,8	XXX	XXX	5	101	151	0.16
13	XXX	XXX	5	101	151	0.16
13,5	XXX	–	1	108	160	0.16
14	XXX	–	1	108	160	0.16
14,1	XXX	–	1	114	169	0.16
14,5	XXX	–	1	114	169	0.16
15	XXX	–	1	114	169	0.16
16	XXX	–	1	120	178	0.16

HSS E | DIN 338 | h8 | 2

Jobber drills, plain shank

Profile ground: this ensures high concentricity and pitch accuracy. Precision ground point. Drill for production use.

11 4450 – **Strengthened core.** Bright finish **parabolic flutes,** from 3 mm nitrided lands.

11 4470 – **Strengthened core,** bright, **flute length to DIN 1897, overall length DIN 338.** Also for **HARDOX materials.**

Recommendation: Maximum drilling depth: flute length (see table) less 1.5×nominal Ø.

≤ 3.9 mm

11 4450

Type FS 130°

11 4470

Type H 135°

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	HARDOX® 500 < 1600 N	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	K						
11 4450	70	45		40	30	25											25	○	●	●			
11 4470							10	8					6	12	8	5			●	●			

Ø h8	11B 11 4450	11B 11 4470						
	Jobber drill HSS-E			11 4450	11 4470	L_{tot}	< 750 N f	
mm	FS	H		mm	mm	mm	mm/rev.	
1	XXX	–	5	12	–	34	0.03	
1,1	XXX	–	5	14	–	36	0.03	
1,2	XXX	–	5	16	–	38	0.03	
1,3	XXX	–	5	16	–	38	0.03	
1,4	XXX	–	5	18	–	40	0.03	
1,5	XXX	–	5	18	–	40	0.03	
1,6	XXX	–	5	20	–	43	0.03	
1,7	XXX	–	5	20	–	43	0.03	
1,8	XXX	–	5	22	–	46	0.03	
1,9	XXX	–	5	22	–	46	0.03	
2	XXX	XXX	5	24	12	49	0.03	
2,1	XXX	–	5	24	–	49	0.03	
2,2	XXX	–	5	27	–	53	0.03	
2,3	XXX	–	5	27	–	53	0.03	
2,4	XXX	–	5	30	–	57	0.03	
2,5	XXX	XXX	5	30	14	57	0.03	
2,6	XXX	–	5	30	–	57	0.03	
2,7	XXX	–	5	33	–	61	0.03	
2,8	XXX	–	5	33	–	61	0.03	
2,9	XXX	–	5	33	–	61	0.03	
3	XXX	XXX	10	33	16	61	0.03	
3,1	XXX	–	10	36	–	65	0.03	
3,2	XXX	XXX	10	36	18	65	0.03	
3,3	XXX	XXX	10	36	18	65	0.03	
3,4	XXX	–	10	39	–	70	0.03	
3,5	XXX	XXX	10	39	20	70	0.03	
3,6	XXX	–	10	39	–	70	0.03	
3,7	XXX	–	10	39	–	70	0.03	
3,8	XXX	–	10	43	–	75	0.03	
3,9	XXX	–	10	43	–	75	0.03	
4	XXX	XXX	10	43	22	75	0.05	
4,1	XXX	–	10	43	–	75	0.05	
4,2	XXX	XXX	10	43	22	75	0.05	
4,3	XXX	–	10	47	–	80	0.05	
4,4	XXX	–	10	47	–	80	0.05	
4,5	XXX	XXX	10	47	24	80	0.05	
4,6	XXX	–	10	47	–	80	0.05	
4,7	XXX	–	10	47	–	80	0.05	
4,8	XXX	–	10	52	–	86	0.05	
4,9	XXX	–	10	52	–	86	0.05	
5	XXX	XXX	10	52	26	86	0.05	
5,1	XXX	–	10	52	–	86	0.05	
5,2	XXX	–	10	52	–	86	0.05	
5,3	XXX	–	10	52	–	86	0.05	
5,4	XXX	–	10	57	–	93	0.05	
5,5	XXX	XXX	10	57	28	93	0.05	
5,6	XXX	–	10	57	–	93	0.05	
5,7	XXX	–	10	57	–	93	0.05	
5,8	XXX	–	10	57	–	93	0.05	
5,9	XXX	–	10	57	–	93	0.05	
6	XXX	XXX	10	57	28	93	0.07	
6,1	XXX	–	10	63	–	101	0.07	

Ø h8	11B 11 4450	11B 11 4470						
	Jobber drill HSS-E			11 4450	11 4470	L_{tot}	< 750 N f	
mm	FS	H		mm	mm	mm	mm/rev.	
6,2	XXX	–	10	63	–	101	0.07	
6,3	XXX	–	10	63	–	101	0.07	
6,4	XXX	–	10	63	–	101	0.07	
6,5	XXX	XXX	10	63	31	101	0.07	
6,6	XXX	–	10	63	–	101	0.07	
6,7	XXX	–	10	63	–	101	0.07	
6,8	XXX	XXX	10	69	34	109	0.07	
6,9	XXX	–	10	69	–	109	0.07	
7	XXX	XXX	10	69	34	109	0.07	
7,1	XXX	–	10	69	–	109	0.07	
7,2	XXX	–	10	69	–	109	0.07	
7,3	XXX	–	10	69	–	109	0.07	
7,4	XXX	–	10	69	–	109	0.07	
7,5	XXX	–	10	69	–	109	0.07	
7,6	XXX	–	5	75	–	117	0.07	
7,7	XXX	–	5	75	–	117	0.07	
7,8	XXX	–	5	75	–	117	0.07	
7,9	XXX	–	5	75	–	117	0.07	
8	XXX	XXX	5	75	37	117	0.1	
8,1	XXX	–	5	75	–	117	0.1	
8,2	XXX	–	5	75	–	117	0.1	
8,3	XXX	–	5	75	–	117	0.1	
8,4	XXX	–	5	75	–	117	0.1	
8,5	XXX	XXX	5	75	37	117	0.1	
8,6	XXX	–	5	81	–	125	0.1	
8,7	XXX	–	5	81	–	125	0.1	
8,8	XXX	–	5	81	–	125	0.1	
8,9	XXX	–	5	81	–	125	0.1	
9	XXX	XXX	5	81	40	125	0.1	
9,1	XXX	–	5	81	–	125	0.1	
9,2	XXX	–	5	81	–	125	0.1	
9,3	XXX	–	5	81	–	125	0.1	
9,4	XXX	–	5	81	–	125	0.1	
9,5	XXX	–	5	81	–	125	0.1	
9,6	XXX	–	5	87	–	133	0.1	
9,7	XXX	–	5	87	–	133	0.1	
9,8	XXX	–	5	87	–	133	0.1	
9,9	XXX	–	5	87	–	133	0.1	
10	XXX	XXX	5	87	43	133	0.1	
10,1	XXX	–	5	87	–	133	0.1	
10,2	XXX	XXX	5	87	43	133	0.1	
10,5	XXX	–	5	87	–	133	0.1	
10,8	XXX	–	5	94	–	142	0.1	
11	XXX	XXX	5	94	47	142	0.1	
11,2	XXX	–	5	94	–	142	0.1	
11,5	XXX	–	5	94	–	142	0.1	
11,8	XXX	–	5	94	–	142	0.1	
12	XXX	XXX	5	101	51	151	0.16	
12,2	XXX	–	5	101	–	151	0.16	
12,5	XXX	–	5	101	–	151	0.16	
12,8	XXX	–	5	101	–	151	0.16	
13	XXX	–	5	101	–	151	0.16	

DIN 338 | h8 | 35° | 2

Garant

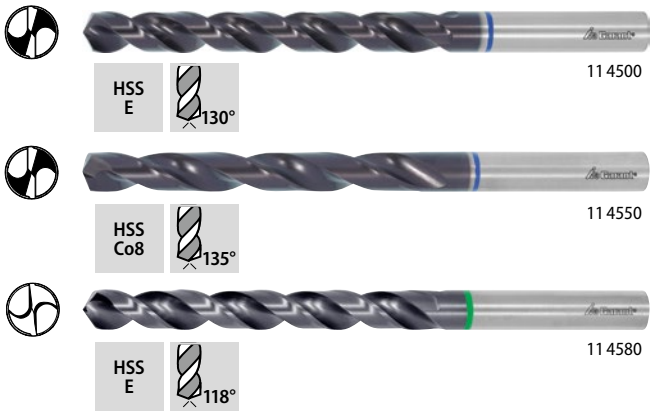
Jobber drill with plain shank, even for stainless steels

11 4500 – **Strengthened core taper.**

11 4550 – **Extremely high heat resistance, very robust** due to **strong core.**

11 4580 – High performance drills for outstanding performance. Precision holes due to optimised diamond point geometry and 4-face grinding. The special flute profile yields a significant reduction in cutting forces.

Recommendation: Maximum drilling depth:
flute length (see table) less 1.5×nominal ∅.



Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	CuZn	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	M	M	S	K	N						
11 4500					37	31							15	12	6				●	●			
11 4550					37	31	12	10					20	15	6				●	●			
11 4580	75	65	60	50	40	35	16						17	13	8	40	50	●	●	●			

∅ h8	11B 11 4500 HSS-E jobber drill TiAlN	11B 11 4550 HSS-Co8 jobber drill TiAlN	11B 11 4580 HSS-E jobber drill TiAlN			L_{tot}	INOX > 900 N f
mm					mm	mm	mm/rev.
1	XXX	XXX	XXX	5	12	34	0.02
1,1	XXX	XXX	XXX	5	14	36	0.02
1,2	XXX	XXX	XXX	5	16	38	0.02
1,3	XXX	XXX	XXX	5	16	38	0.02
1,4	XXX	XXX	XXX	5	18	40	0.02
1,5	XXX	XXX	XXX	5	18	40	0.02
1,6	XXX	XXX	XXX	5	20	43	0.02
1,7	XXX	XXX	XXX	5	20	43	0.02
1,8	XXX	XXX	XXX	5	22	46	0.02
1,9	XXX	XXX	XXX	5	22	46	0.02
2	XXX	XXX	XXX	5	24	49	0.02
2,1	XXX	XXX	XXX	5	24	49	0.02
2,2	XXX	XXX	XXX	5	27	53	0.02
2,3	XXX	XXX	XXX	5	27	53	0.02
2,4	XXX	XXX	XXX	5	30	57	0.02
2,5	XXX	XXX	XXX	5	30	57	0.02
2,6	XXX	XXX	XXX	5	30	57	0.02
2,7	XXX	XXX	XXX	5	33	61	0.02
2,8	XXX	XXX	XXX	5	33	61	0.02
2,9	XXX	XXX	XXX	5	33	61	0.02
3	XXX	XXX	XXX	10	33	61	0.02
3,1	XXX	XXX	XXX	10	36	65	0.02
3,2	XXX	XXX	XXX	10	36	65	0.02
3,3	XXX	XXX	XXX	10	36	65	0.02
3,4	XXX	XXX	XXX	10	39	70	0.02
3,5	XXX	XXX	XXX	10	39	70	0.02
3,6	XXX	XXX	XXX	10	39	70	0.02
3,7	XXX	XXX	XXX	10	39	70	0.02
3,8	XXX	XXX	XXX	10	43	75	0.02
3,9	XXX	XXX	XXX	10	43	75	0.02
4	XXX	XXX	XXX	10	43	75	0.03
4,1	XXX	XXX	XXX	10	43	75	0.03
4,2	XXX	XXX	XXX	10	43	75	0.03
4,3	XXX	XXX	XXX	10	47	80	0.03
4,4	XXX	XXX	XXX	10	47	80	0.03
4,5	XXX	XXX	XXX	10	47	80	0.03
4,6	XXX	XXX	XXX	10	47	80	0.03
4,7	XXX	XXX	XXX	10	47	80	0.03
4,8	XXX	XXX	XXX	10	52	86	0.03
4,9	XXX	XXX	XXX	10	52	86	0.03
5	XXX	XXX	XXX	10	52	86	0.04
5,1	XXX	XXX	XXX	10	52	86	0.04
5,2	XXX	XXX	XXX	10	52	86	0.04
5,3	XXX	XXX	XXX	10	52	86	0.04
5,4	XXX	XXX	XXX	10	57	93	0.04
5,5	XXX	XXX	XXX	10	57	93	0.04
5,6	XXX	XXX	XXX	10	57	93	0.04
5,7	XXX	XXX	XXX	10	57	93	0.04
5,8	XXX	XXX	XXX	10	57	93	0.04
5,9	XXX	XXX	XXX	10	57	93	0.04
6	XXX	XXX	XXX	10	57	93	0.05
6,1	XXX	XXX	XXX	10	63	101	0.05

∅ h8	11B 11 4500 HSS-E jobber drill TiAlN	11B 11 4550 HSS-Co8 jobber drill TiAlN	11B 11 4580 HSS-E jobber drill TiAlN			L_{tot}	INOX > 900 N f
mm					mm	mm	mm/rev.
6,2	XXX	XXX	XXX	10	63	101	0.05
6,3	XXX	XXX	XXX	10	63	101	0.05
6,4	XXX	XXX	XXX	10	63	101	0.05
6,5	XXX	XXX	XXX	10	63	101	0.05
6,6	XXX	XXX	XXX	10	63	101	0.05
6,7	XXX	XXX	XXX	10	63	101	0.05
6,8	XXX	XXX	XXX	10	69	109	0.05
6,9	XXX	XXX	XXX	10	69	109	0.05
7	XXX	XXX	XXX	10	69	109	0.05
7,1	XXX	XXX	XXX	10	69	109	0.05
7,2	XXX	XXX	XXX	10	69	109	0.05
7,3	XXX	XXX	XXX	10	69	109	0.05
7,4	XXX	XXX	XXX	10	69	109	0.05
7,5	XXX	XXX	XXX	10	69	109	0.05
7,6	XXX	XXX	XXX	5	75	117	0.05
7,7	XXX	XXX	XXX	5	75	117	0.05
7,8	XXX	XXX	XXX	5	75	117	0.05
7,9	XXX	XXX	XXX	5	75	117	0.05
8	XXX	XXX	XXX	5	75	117	0.09
8,1	XXX	XXX	XXX	5	75	117	0.09
8,2	XXX	XXX	XXX	5	75	117	0.09
8,3	XXX	XXX	XXX	5	75	117	0.09
8,4	XXX	XXX	XXX	5	75	117	0.09
8,5	XXX	XXX	XXX	5	75	117	0.09
8,6	XXX	XXX	XXX	5	81	125	0.09
8,7	XXX	XXX	XXX	5	81	125	0.09
8,8	XXX	XXX	XXX	5	81	125	0.09
8,9	XXX	XXX	XXX	5	81	125	0.09
9	XXX	XXX	XXX	5	81	125	0.09
9,1	XXX	XXX	XXX	5	81	125	0.09
9,2	XXX	XXX	XXX	5	81	125	0.09
9,3	XXX	XXX	XXX	5	81	125	0.09
9,4	XXX	XXX	XXX	5	81	125	0.09
9,5	XXX	XXX	XXX	5	81	125	0.09
9,6	XXX	XXX	XXX	5	87	133	0.09
9,7	XXX	XXX	XXX	5	87	133	0.09
9,8	XXX	XXX	XXX	5	87	133	0.09
9,9	XXX	XXX	XXX	5	87	133	0.09
10	XXX	XXX	XXX	5	87	133	0.09
10,1	XXX	XXX	XXX	5	87	133	0.09
10,2	XXX	XXX	XXX	5	87	133	0.09
10,5	XXX	XXX	XXX	5	87	133	0.09
10,8	XXX	XXX	XXX	5	94	142	0.09
11	XXX	XXX	XXX	5	94	142	0.09
11,2	XXX	XXX	XXX	5	94	142	0.09
11,5	XXX	XXX	XXX	5	94	142	0.09
11,8	XXX	XXX	XXX	5	94	142	0.09
12	XXX	XXX	XXX	5	101	151	0.13
12,2	XXX	XXX	XXX	5	101	151	0.13
12,5	XXX	XXX	XXX	5	101	151	0.13
12,8	XXX	–	–	5	101	151	0.13
13	XXX	XXX	XXX	5	101	151	0.13

HSS E-PM | DIN 338 | h8 | 130° | 38° | 2 | HPC

Garant

HPC jobber drill

High-performance HPC twist drills for high-alloy and high tensile materials. Particularly strong due to **strengthened core and a parabolic flute profile**. Point geometry with rake angle correction. Precise concentricity for exact holes.

11 4620 – Dimensions similar to DIN 338.
Shank to DIN 1835A.

Recommendation: Maximum drilling depth:
flute length (see table) less 1.5×nominal ∅.

11 4610

11 4620

h6 DIN 1835 A

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	CuZn	Uni
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	M	M	S	K	N	
11 4610/4620	80	70	60		50	40	25	14					20	15	12	50	60	●

∅ h8	11 4610	11 4620			L_{tot}			< 900 N
	Jobber drill HSS-E-PM HPC				11 4610	11 4620	11 4620	f
mm	TiAlN	TiAlN		mm	mm	mm	mm	mm/rev.
1	XXX	–	5	12	34	–	–	0.03
1,1	XXX	–	5	14	36	–	–	0.03
1,2	XXX	–	5	16	38	–	–	0.03
1,3	XXX	–	5	16	38	–	–	0.03
1,4	XXX	–	5	18	40	–	–	0.03
1,5	XXX	–	5	18	40	–	–	0.03
1,6	XXX	–	5	20	43	–	–	0.03
1,7	XXX	–	5	20	43	–	–	0.03
1,8	XXX	–	5	22	46	–	–	0.03
1,9	XXX	–	5	22	46	–	–	0.03
2	XXX	XXX	5	24	49	56	3	0.03
2,1	XXX	XXX	5	24	49	56	3	0.03
2,2	XXX	–	5	27	53	–	–	0.03
2,3	XXX	XXX	5	27	53	59	3	0.03
2,4	XXX	XXX	5	30	57	62	3	0.03
2,5	XXX	XXX	5	30	57	62	3	0.03
2,6	XXX	XXX	5	30	57	62	3	0.03
2,7	XXX	XXX	5	33	61	65	3	0.03
2,8	XXX	XXX	5	33	61	65	3	0.03
2,9	XXX	XXX	5	33	61	65	3	0.03
3	XXX	XXX	10	33	61	65	3	0.03
3,1	XXX	–	10	36	65	–	–	0.03
3,2	XXX	XXX	10	36	65	68	4	0.03
3,3	XXX	XXX	10	36	65	68	4	0.03
3,4	XXX	–	10	39	70	–	–	0.03
3,5	XXX	XXX	10	39	70	71	4	0.03
3,6	XXX	–	10	39	70	–	–	0.03
3,7	XXX	XXX	10	39	70	71	4	0.03
3,8	XXX	XXX	10	43	75	75	4	0.03
3,9	XXX	–	10	43	75	–	–	0.03
4	XXX	XXX	10	43	75	75	4	0.05
4,1	XXX	–	10	43	75	–	–	0.05
4,2	XXX	XXX	10	43	75	87	6	0.05
4,3	XXX	–	10	47	80	–	–	0.05
4,4	XXX	–	10	47	80	–	–	0.05
4,5	XXX	XXX	10	47	80	91	6	0.05
4,6	XXX	–	10	47	80	–	–	0.05
4,65	–	XXX	10	47	–	91	6	0.05
4,7	XXX	–	10	47	80	–	–	0.05
4,8	XXX	XXX	10	52	86	96	6	0.05
4,9	XXX	–	10	52	86	–	–	0.05
5	XXX	XXX	10	52	86	96	6	0.05
5,1	XXX	–	10	52	86	–	–	0.05
5,2	XXX	XXX	10	52	86	96	6	0.05
5,3	XXX	–	10	52	86	–	–	0.05
5,4	XXX	–	10	57	93	–	–	0.05
5,5	XXX	XXX	10	57	93	101	6	0.05
5,55	–	XXX	10	57	–	101	6	0.05
5,6	XXX	–	10	57	93	–	–	0.05
5,7	XXX	–	10	57	93	–	–	0.05
5,8	XXX	XXX	10	57	93	101	6	0.05
5,9	XXX	–	10	57	93	–	–	0.05
6	XXX	XXX	10	57	93	101	6	0.08

∅ h8	11 4610	11 4620			L_{tot}			< 900 N
	Jobber drill HSS-E-PM HPC				11 4610	11 4620	11 4620	f
mm	TiAlN	TiAlN		mm	mm	mm	mm	mm/rev.
6,1	XXX	–	10	63	101	–	–	0.08
6,2	XXX	XXX	10	63	101	107	8	0.08
6,3	XXX	–	10	63	101	–	–	0.08
6,4	XXX	–	10	63	101	–	–	0.08
6,5	XXX	XXX	10	63	101	107	8	0.08
6,6	XXX	–	10	63	101	–	–	0.08
6,7	XXX	–	10	63	101	–	–	0.08
6,8	XXX	XXX	10	69	109	113	8	0.08
6,9	XXX	–	10	69	109	–	–	0.08
7	XXX	XXX	10	69	109	113	8	0.08
7,1	XXX	–	10	69	109	–	–	0.08
7,2	XXX	–	10	69	109	–	–	0.08
7,3	XXX	–	10	69	109	–	–	0.08
7,4	XXX	–	10	69	109	–	–	0.08
7,5	XXX	XXX	10	69	109	113	8	0.08
7,6	XXX	–	5	75	117	–	–	0.08
7,7	XXX	–	5	75	117	–	–	0.08
7,8	XXX	XXX	5	75	117	119	8	0.08
7,9	XXX	–	5	75	117	–	–	0.08
8	XXX	XXX	5	75	117	119	8	0.11
8,1	XXX	–	5	75	117	–	–	0.11
8,2	XXX	–	5	75	117	–	–	0.11
8,3	XXX	–	5	75	117	–	–	0.11
8,4	XXX	–	5	75	117	–	–	0.11
8,5	XXX	XXX	5	75	117	125	10	0.11
8,6	XXX	–	5	81	125	–	–	0.11
8,7	XXX	–	5	81	125	–	–	0.11
8,8	XXX	XXX	5	81	125	131	10	0.11
8,9	XXX	–	5	81	125	–	–	0.11
9	XXX	XXX	5	81	125	131	10	0.11
9,1	XXX	–	5	81	125	–	–	0.11
9,2	XXX	–	5	81	125	–	–	0.11
9,3	XXX	XXX	5	81	125	131	10	0.11
9,4	XXX	–	5	81	125	–	–	0.11
9,5	XXX	XXX	5	81	125	131	10	0.11
9,6	XXX	–	5	87	133	–	–	0.11
9,7	XXX	–	5	87	133	–	–	0.11
9,8	XXX	XXX	5	87	133	137	10	0.11
9,9	XXX	–	5	87	133	–	–	0.11
10	XXX	XXX	5	87	133	137	10	0.11
10,1	XXX	–	5	87	133	–	–	0.11
10,2	XXX	XXX	5	87	133	144	12	0.11
10,5	XXX	XXX	5	87	133	144	12	0.11
10,8	XXX	XXX	5	94	142	151	12	0.11
11	XXX	XXX	5	94	142	151	12	0.11
11,2	XXX	XXX	5	94	142	151	12	0.11
11,5	XXX	–	5	94	142	–	–	0.11
11,8	XXX	XXX	5	94	142	151	12	0.11
12	XXX	XXX	5	101	151	158	12	0.17
12,2	XXX	–	5	101	151	–	–	0.17
12,5	XXX	–	5	101	151	–	–	0.17
13	XXX	XXX	5	101	151	161	14	0.17

h8

Jobber drill sets, DIN 338

Composed of jobber drills DIN 338.
11 5000/5050/5120 Size 1-10C –
Large assortment case from 1 – 10 mm, with 150 jobber drills: 10× each ∅ 1 – 6, 5× each ∅ 6.5 – 10. Ideal for sitework and workshop use.

11 5000_1-13

11 5000_1-13KB
with core hole-∅
(3.3; 4.2; 6.8; 10.2)

11 5000_1-10C

HSS | Type N | 118°

Type			1-6	6-10	2-10	1-10	1-10,5	1-13	1-13KB	1-10C
12B 11 5000	HOLEX	Jobber drill set HSS No. 114000 in a case	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
12B 11 5020	HOLEX	Jobber drill set HSS No. 114000 as refill set	XXX	XXX	XXX	XXX	XXX	XXX	XXX	–
Drill range		mm	1 – 6	6 – 10	2 – 10	1 – 10	1 – 10.5	1 – 13	1 – 13	1 – 10
Number of drills			51	41	81	19	24	25	29	150
Tapping hole ∅		mm	–	–	–	–	3.3; 4.2; 6.8; 10.2	–	3.3; 4.2; 6.8; 10.2	–
Incremental steps of drills		mm	0.1	0.1	0.1	0.5	0.5	0.5	0.5	0.5

HSS | DIN 338 | Type N | 118°

Type			1-10	1-13
12B 11 5030	HOLEX	Jobber drill set HSS No. 114020 in a case	XXX	XXX
12B 11 5032	HOLEX	Jobber drill set HSS No. 114020 as refill set	XXX	XXX
Drill range		mm	1 – 10	1 – 13
Number of drills			19	25
Incremental steps of drills		mm	0.5	

HSS | DIN 338 | Type N | 130°

≥ 3 mm

Type			1-6	6-10	2-10	1-10	1-10,5	1-13	1-13KB	1-10C
12B 11 5050	HOLEX	CleverDrill HSS jobber drill set No. 114030 in a case	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
12B 11 5055	HOLEX	CleverDrill HSS jobber drill set No. 114030 as a refill set	XXX	XXX	XXX	XXX	XXX	XXX	XXX	–
Drill range		mm	1 – 6	6 – 10	2 – 10	1 – 10	1 – 10.5	1 – 13	1 – 13	1 – 10
Number of drills			51	41	81	19	24	25	29	150
Tapping hole ∅		mm	–	–	–	–	3.3; 4.2; 6.8; 10.2	–	3.3; 4.2; 6.8; 10.2	–
Incremental steps of drills		mm	0.1	0.1	0.1	0.5	0.5	0.5	0.5	0.5

HSS | DIN 338 | Type N | 118°

≥ 4 mm

Type			1-6	6-10	1-10	1-13	1-13KB	1-10C
11B 11 5120	Garant	Jobber drill set HSS No. 114150 in a case	XXX	XXX	XXX	XXX	XXX	XXX
11B 11 5140	Garant	Jobber drill set HSS No. 114150 as refill set	XXX	XXX	XXX	XXX	XXX	–
Drill range		mm	1 – 6	6 – 10	1 – 10	1 – 13	1 – 13	1 – 10
Number of drills			51	41	19	25	29	150
Tapping hole ∅		mm	–	–	–	–	3.3; 4.2; 6.8; 10.2	–
Incremental steps of drills		mm	0.1	0.1	0.5	0.5	0.5	0.5

HSS | DIN 338 | Type W | 130°

≥ 2 mm

Type			1-6	6-10	1-10	1-13
11B 11 5160	Garant	Jobber drill set HSS No. 114200 in a case	XXX	XXX	XXX	XXX
Drill range		mm	1 – 6	6 – 10	1 – 10	1 – 13
Number of drills			51	41	19	25
Incremental steps of drills		mm	0.1	0.1	0.5	0.5

HSS | DIN 338 | Type N | 118°

≥ 2.4 mm

Type			1-6	6-10	1-10	1-10,5	1-13	1-13KB
12B 11 5245	HOLEX	Jobber drill set HSS No. 114360 in a case, TiN	XXX	XXX	XXX	XXX	XXX	XXX
12B 11 5265	HOLEX	Jobber drill set HSS No. 114360 as refill set, TiN	XXX	XXX	XXX	XXX	XXX	XXX
Drill range		mm	1 – 6	6 – 10	1 – 10	1 – 10.5	1 – 13	1 – 13
Number of drills			51	41	19	24	25	29
Tapping hole ∅		mm	–	–	–	3.3; 4.2; 6.8; 10.2	–	3.3; 4.2; 6.8; 10.2
Incremental steps of drills		mm	0.1	0.1	0.5	0.5	0.5	0.5

HSS E | DIN 338 | Type N | 130°

≥ 2 mm

Type			1-6	6-10	1-10	1-10,5	1-13	1-13KB
11B 11 5280	Garant	Jobber drill set HSS-E No. 114400 in a case	XXX	XXX	XXX	XXX	XXX	XXX
11B 11 5300	Garant	Jobber drill set HSS-E No. 114400 as refill set	XXX	XXX	XXX	XXX	XXX	XXX
Drill range		mm	1 – 6	6 – 10	1 – 10	1 – 10.5	1 – 13	1 – 13
Number of drills			51	41	19	24	25	29
Tapping hole ∅		mm	–	–	–	3.3; 4.2; 6.8; 10.2	–	3.3; 4.2; 6.8; 10.2
Incremental steps of drills		mm	0.1	0.1	0.5	0.5	0.5	0.5

HSS E | DIN 338 | Type N | 135°

≥ 2 mm

Type			1-10	1-13
12B 11 5305	HOLEX	Jobber drill set HSS-E No. 114405 in a case	XXX	XXX
12B 11 5315	HOLEX	Jobber drill set HSS-E No. 114405 as refill set	XXX	XXX
Drill range		mm	1 – 10	1 – 13
Number of drills			19	25
Incremental steps of drills		mm	0.5	

HSS E | DIN 338 | Type FS | 130°

≤ 3.9 mm | ≥ 4 mm

Type			1-10	1-13
11B 11 5320	Garant	Jobber drill set HSS-E No. 114450 in a case	XXX	XXX
Drill range		mm	1 – 10	1 – 13
Number of drills			19	25
Incremental steps of drills		mm	0.5	

HSS E | DIN 338 | 135°

Type			1-10	1-13
11B 11 5350	Garant	Jobber drill set HSS-E No. 114500 in a case, TiAlN	XXX	XXX
11B 11 5355	Garant	Jobber drill set HSS-E No. 114500 as refill set, TiAlN	XXX	XXX
Drill range		mm	1 – 10	1 – 13
Number of drills			19	25
Incremental steps of drills		mm	0.5	

HSS Co8 | DIN 338 | 135° | 35°

Type				1-10	1-13	1-13KB
11B 11 5370	Garant	HSS-Co8 jobber drill No. 114550 in a case	TiAlN	XXX	XXX	XXX
11B 11 5375	Garant	HSS-Co8 jobber drill No. 114550 as a refill set	TiAlN	XXX	XXX	XXX
Drill range			mm	1 – 10	1 – 13	1 – 13
Number of drills				19	25	29
Tapping hole ∅			mm	–	–	3.3; 4.2; 6.8; 10.2
Incremental steps of drills			mm		0.5	

HSS E | DIN 338 | 118°

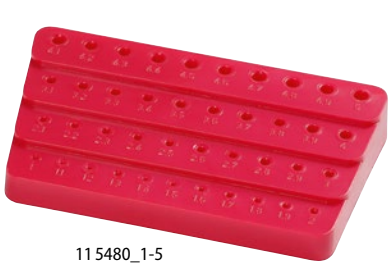
Type				1-6	6-10	1-10	1-13
11B 11 5450	Garant	Jobber drill set HSS-E No. 114580 in a case	TiAlN	XXX	XXX	XXX	XXX
Drill range			mm	1 – 6	6 – 10	1 – 10	1 – 13
Number of drills				51	41	19	25
Incremental steps of drills			mm	0.1	0.1	0.5	0.5

HSS E-PM | DIN 338 | 130° | 38° | HPC

Type				1-10	1-13
11B 11 5465	Garant	Jobber drill set HSS-E-PM No. 114610 in a case	TiAlN	XXX	XXX
Drill range			mm	1 – 10	1 – 13
Number of drills				19	25
Incremental steps of drills			mm	0.5	

Cases and plastic stands, empty

For filling with refill sets, suitable for jobber drills to DIN 338.
11 5475 Size 1-10,5; 1-13KB – With additional capacity for intermediate sizes ∅ 3.3 / 4.2 / 6.8 / 10.2 (tapping drill hole sizes).



11 5480_1-5

11 5475_1-10,5

11 5470_1-10

11 5470_1-10C

Type			1-6	6-10	1-10	1-10,5	1-5	5,1-10	1-13	2-10	1-13KB	1-10C
11B 11 5470	Garant	Empty case for jobber drills to DIN 338	XXX	XXX	XXX	XXX	–	–	XXX	–	XXX	XXX
12B 11 5475	HOLEX		XXX	XXX	XXX	XXX	–	–	XXX	XXX	XXX	XXX
12B 11 5480			–	–	–	–	XXX	XXX	XXX	–	–	–
for drills		mm	1 – 6	6 – 10	1 – 10	1 – 10.5	1 – 5	5.1 – 10	1 – 13	2 – 10	1 – 13	1 – 10
Incremental steps of drills		mm	0.1	0.1	0.5	0.5	0.1	0.1	0.5	0.1	0.5	0.5

HSS | DIN 340 | h8 | 2

Long jobber drills, deep hole drills, plain shank

11 6000 – Steam tempered from 2 mm.
Particularly for deep hole drilling (for deep holes, repeated chip evacuation is necessary).

11 6040 – Strengthened core **without core taper.**
Precision ground point.
Wide flutes with heavily honed back edges.
Bright ground surface finish.

11 6050 – **HOLEX CleverDrill** – Sturdy drill for all standard applications. Improved spot drilling behaviour due to cross-ground form.
Standard core thickness and core taper.
Profile ground.
Surface: Bronze-coloured tempered helical flutes.

Advantage:

11 6000 – Especially suitable for **long reach purposes.** (When used to drill deep holes, low feed rates and frequent drill pecks are necessary).

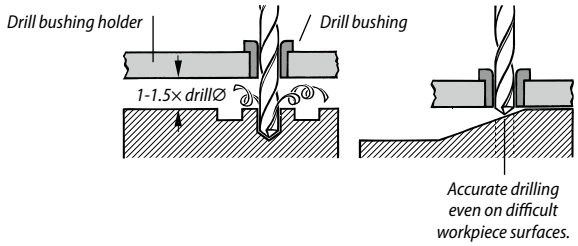
11 6040 – For deep hole drilling and for use with drill bushings.

Recommendation: Maximum drilling depth: flute length (see table) less 1.5×nominal ∅.

≥ 4 mm

≥ 2.5 mm

≥ 3 mm



Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	CuZn					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	K	N					
11 6000				**40**	**30**	**25**											25		●	●			
11 6040	**70**	**45**	40																●	●			
11 6050	64	52	40	**26**	**26**	**20**	15										24	**32**	●	●			

∅ h8	11 6000	11 6040	11 6050			
	Garant		HOLEX			
	Jobber drill long HSS		HOLEX CleverDrill jobber drill, long HSS			
mm	N	W	N		mm	mm
0,6	XXX	–	–	5	15	35
0,8	XXX	–	–	5	25	46
1	XXX	–	–	5	33	56
1,1	XXX	–	–	5	37	60
1,2	XXX	–	–	5	41	65
1,3	XXX	–	–	5	41	65
1,4	XXX	–	–	5	45	70
1,5	XXX	–	–	5	45	70
1,6	XXX	–	–	5	50	76
1,7	XXX	–	–	5	50	76
1,8	XXX	–	–	5	53	80
1,9	XXX	–	–	5	53	80
2	XXX	–	XXX	5	56	85
2,1	XXX	–	XXX	5	56	85
2,2	XXX	–	XXX	5	59	90
2,3	XXX	–	XXX	5	59	90
2,4	XXX	–	XXX	5	62	95
2,5	XXX	XXX	XXX	5	62	95
2,6	XXX	–	XXX	5	62	95
2,7	XXX	–	XXX	5	66	100
2,8	XXX	–	XXX	5	66	100
2,9	XXX	–	XXX	5	66	100
3	XXX	XXX	XXX	10	66	100
3,1	XXX	–	XXX	10	69	106
3,2	XXX	XXX	XXX	10	69	106
3,3	XXX	XXX	XXX	10	69	106
3,4	XXX	–	XXX	10	73	112
3,5	XXX	XXX	XXX	10	73	112
3,6	XXX	–	XXX	10	73	112
3,7	XXX	–	XXX	10	73	112
3,8	XXX	–	XXX	10	78	119
3,9	XXX	–	XXX	10	78	119
4	XXX	XXX	XXX	10	78	119

∅ h8	11 6000	11 6040	11 6050			
	Garant		HOLEX			
	Jobber drill long HSS		HOLEX CleverDrill jobber drill, long HSS			
mm	N	W	N		mm	mm
4,1	XXX	–	XXX	10	78	119
4,2	XXX	XXX	XXX	10	78	119
4,5	XXX	XXX	XXX	10	82	126
4,8	XXX	–	XXX	10	87	132
5	XXX	XXX	XXX	10	87	132
5,1	–	–	XXX	10	87	132
5,2	XXX	–	–	10	87	132
5,5	XXX	XXX	XXX	10	91	139
5,8	XXX	–	XXX	10	91	139
6	XXX	XXX	XXX	10	91	139
6,2	XXX	–	XXX	10	97	148
6,5	XXX	XXX	XXX	10	97	148
6,8	XXX	–	XXX	5	102	156
7	XXX	XXX	XXX	5	102	156
7,2	XXX	–	XXX	5	102	156
7,5	XXX	XXX	XXX	5	102	156
7,8	XXX	–	XXX	5	109	165
8	XXX	XXX	XXX	5	109	165
8,2	XXX	–	XXX	5	109	165
8,5	XXX	XXX	XXX	5	109	165
9	XXX	XXX	XXX	5	115	175
9,5	XXX	–	XXX	5	115	175
9,8	XXX	–	XXX	5	121	184
10	XXX	XXX	XXX	5	121	184
10,5	XXX	–	XXX	1	121	184
11	XXX	–	XXX	1	128	195
11,5	XXX	–	XXX	1	128	195
12	XXX	–	XXX	1	134	205
12,5	XXX	–	XXX	1	134	205
13	XXX	–	XXX	1	134	205
14	XXX	–	XXX	1	140	214
15	XXX	–	XXX	1	144	220
16	XXX	–	XXX	1	149	227

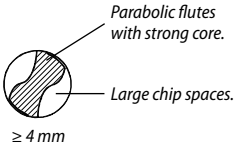
HSS E | DIN 340 | Type FS | h8 | 130° | 38° | 2

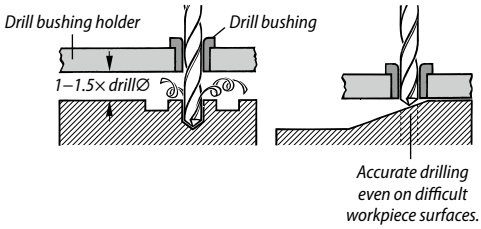
Garant Deep hole drills, plain shank

Significantly **strengthened core** without taper.
Precision ground point.
With **specially shaped slots**.
Designed for deep holes up to 10×D and materials with critical chip formation characteristics.

11 6063 – With **TiAlN coating** for long tool lives.

Recommendation: Maximum drilling depth:
flute length (see table)
less 1.5×nominal Ø.





Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	K						
11 6061	70	45		28	21	18											25		●	●			
11 6063	87	56	50	31	23	20	12									6	31	○	●	●			

Ø h8	11B 11 6061	11B 11 6063			L_{tot}	< 500 N f	< 750 N f
	Deep hole drill HSS-E					11 6061	11 6063
mm		TiAlN		mm	mm	mm/rev.	mm/rev.
1	XXX	XXX	5	33	56	0.05	0.03
1,1	XXX	XXX	5	37	60	0.05	0.03
1,2	XXX	XXX	5	41	65	0.05	0.03
1,3	XXX	XXX	5	41	65	0.05	0.03
1,4	XXX	XXX	5	45	70	0.05	0.03
1,5	XXX	XXX	5	45	70	0.05	0.03
1,6	XXX	XXX	5	50	76	0.05	0.03
1,7	XXX	XXX	5	50	76	0.05	0.03
1,8	XXX	XXX	5	53	80	0.05	0.03
1,9	XXX	XXX	5	53	80	0.05	0.03
2	XXX	XXX	5	56	85	0.05	0.03
2,1	XXX	XXX	5	56	85	0.05	0.03
2,2	XXX	XXX	5	59	90	0.05	0.03
2,3	XXX	XXX	5	59	90	0.05	0.03
2,4	XXX	XXX	5	62	95	0.05	0.03
2,5	XXX	XXX	5	62	95	0.05	0.03
2,6	XXX	XXX	5	62	95	0.05	0.03
2,7	XXX	XXX	5	66	100	0.05	0.03
2,8	XXX	XXX	5	66	100	0.05	0.03
2,9	XXX	XXX	5	66	100	0.05	0.03
3	XXX	XXX	10	66	100	0.05	0.03
3,1	XXX	XXX	10	69	106	0.05	0.03
3,2	XXX	XXX	10	69	106	0.05	0.03
3,3	XXX	XXX	10	69	106	0.05	0.03
3,4	XXX	XXX	10	73	112	0.05	0.03
3,5	XXX	XXX	10	73	112	0.05	0.03
3,6	XXX	XXX	10	73	112	0.05	0.03
3,7	XXX	XXX	10	73	112	0.05	0.03
3,8	XXX	XXX	10	78	119	0.05	0.03
3,9	XXX	XXX	10	78	119	0.05	0.03
4	XXX	XXX	10	78	119	0.05	0.05

Ø h8	11B 11 6061	11B 11 6063			L_{tot}	< 500 N f	< 750 N f
	Deep hole drill HSS-E					11 6061	11 6063
mm		TiAlN		mm	mm	mm/rev.	mm/rev.
4,2	XXX	XXX	10	78	119	0.05	0.05
4,5	XXX	XXX	10	82	126	0.05	0.05
4,8	XXX	XXX	10	87	132	0.05	0.05
5	XXX	XXX	10	87	132	0.05	0.05
5,2	XXX	XXX	10	87	132	0.05	0.05
5,5	XXX	XXX	10	91	139	0.05	0.05
5,8	XXX	XXX	10	91	139	0.05	0.05
6	XXX	XXX	10	91	139	0.12	0.08
6,2	XXX	–	10	97	148	0.12	–
6,5	XXX	XXX	10	97	148	0.12	0.08
6,8	XXX	XXX	5	102	156	0.12	0.08
7	XXX	XXX	5	102	156	0.12	0.08
7,2	XXX	–	5	102	156	0.12	–
7,5	XXX	XXX	5	102	156	0.12	0.08
7,8	XXX	XXX	5	109	165	0.12	0.08
8	XXX	XXX	5	109	165	0.2	0.11
8,2	XXX	–	5	109	165	0.2	–
8,5	XXX	XXX	5	109	165	0.2	0.11
9	XXX	XXX	5	115	175	0.2	0.11
9,5	XXX	XXX	5	115	175	0.2	0.11
9,8	XXX	XXX	5	121	184	0.2	0.11
10	XXX	XXX	5	121	184	0.2	0.11
10,2	XXX	–	1	121	184	0.2	–
10,5	XXX	XXX	1	121	184	0.2	0.11
11	XXX	XXX	1	128	195	0.2	0.11
11,5	XXX	XXX	1	128	195	0.2	0.11
12	XXX	XXX	1	134	205	0.25	0.17
12,5	XXX	XXX	1	134	205	0.25	0.17
13	XXX	XXX	1	134	205	0.25	0.17
14	XXX	–	1	140	214	0.25	–

HSS E | DIN 340 | h8 | 35-40° | 2

Jobber drills, long, plain shank

Profile ground. Standard core thickness and core taper. Bright finish.

Advantage: For drilling with drill bushes or long reach applications.

11 6065 – For high-tensile tempered steels, **including TOOLOX.**

Recommendation: Maximum drilling depth: flute length (see table) less 1.5×nominal Ø.

≥ 2 mm

11 6065

Type N | 118°

11 6070

130°

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	TOOLOX® 33 HRC	TOOLOX® 44 HRC	INOX < 900 N	INOX > 900 N	CuZn	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	H	M	M	N						
11 6065					30	25	10	8					8	5	12	8	80	○	●	●			
11 6070				40	20										12	8			●	●			

Ø h8	11 6065	11 6070				< 1100 N	INOX < 900 N
	Jobber drill, long, HSS-E				L_{tot}	f	f
						11 6065	11 6070
mm	N	VA		mm	mm	mm/rev.	mm/rev.
1	XXX	XXX	5	33	56	0.01	0.01
1,1	XXX	XXX	5	37	60	0.01	0.01
1,2	XXX	XXX	5	41	65	0.01	0.01
1,3	XXX	XXX	5	41	65	0.01	0.01
1,4	XXX	XXX	5	45	70	0.01	0.01
1,5	XXX	XXX	5	45	70	0.01	0.01
1,6	XXX	XXX	5	50	76	0.01	0.01
1,7	XXX	XXX	5	50	76	0.01	0.01
1,8	XXX	XXX	5	53	80	0.01	0.01
1,9	XXX	XXX	5	53	80	0.01	0.01
2	XXX	XXX	5	56	85	0.02	0.02
2,1	XXX	XXX	5	56	85	0.02	0.02
2,2	XXX	XXX	5	59	90	0.02	0.02
2,3	XXX	XXX	5	59	90	0.02	0.02
2,4	XXX	XXX	5	62	95	0.02	0.02
2,5	XXX	XXX	5	62	95	0.02	0.02
2,6	XXX	XXX	5	62	95	0.02	0.02
2,7	XXX	XXX	5	66	100	0.02	0.02
2,8	XXX	XXX	5	66	100	0.02	0.02
2,9	XXX	XXX	5	66	100	0.02	0.02
3	XXX	XXX	10	66	100	0.02	0.02
3,1	XXX	XXX	10	69	106	0.02	0.02
3,2	XXX	XXX	10	69	106	0.02	0.02
3,3	XXX	XXX	10	69	106	0.02	0.02
3,4	XXX	XXX	10	73	112	0.02	0.02
3,5	XXX	XXX	10	73	112	0.02	0.02
3,6	XXX	XXX	10	73	112	0.02	0.02
3,7	XXX	XXX	10	73	112	0.02	0.02
3,8	XXX	XXX	10	78	119	0.02	0.02
3,9	XXX	XXX	10	78	119	0.02	0.02
4	XXX	XXX	10	78	119	0.05	0.05
4,1	–	XXX	10	78	119	–	0.05
4,2	XXX	XXX	10	78	119	0.05	0.05
4,3	–	XXX	10	82	126	–	0.05
4,4	–	XXX	10	82	126	–	0.05
4,5	XXX	XXX	10	82	126	0.05	0.05
4,6	–	XXX	10	82	126	–	0.05
4,7	–	XXX	10	82	126	–	0.05
4,8	XXX	XXX	10	87	132	0.05	0.05
4,9	–	XXX	10	87	132	–	0.05
5	XXX	XXX	10	87	132	0.05	0.05
5,1	–	XXX	10	87	132	–	0.05
5,2	XXX	XXX	10	87	132	0.05	0.05
5,3	–	XXX	10	87	139	–	0.05
5,4	–	XXX	10	91	139	–	0.05
5,5	XXX	XXX	10	91	139	0.05	0.05
5,6	–	XXX	10	91	139	–	0.05
5,7	–	XXX	10	91	139	–	0.05
5,8	XXX	XXX	10	91	139	0.05	0.05

Ø h8	11 6065	11 6070				< 1100 N	INOX < 900 N
	Jobber drill, long, HSS-E				L_{tot}	f	f
						11 6065	11 6070
mm	N	VA		mm	mm	mm/rev.	mm/rev.
5,9	–	XXX	10	91	139	–	0.05
6	XXX	XXX	10	91	139	0.05	0.05
6,1	–	XXX	10	97	148	–	0.05
6,2	XXX	XXX	10	97	148	0.05	0.05
6,3	–	XXX	10	97	148	–	0.05
6,4	–	XXX	10	97	148	–	0.05
6,5	XXX	XXX	10	97	148	0.05	0.05
6,6	–	XXX	10	97	148	–	0.05
6,7	–	XXX	10	97	148	–	0.05
6,8	XXX	XXX	5	102	156	0.05	0.05
6,9	–	XXX	5	102	156	–	0.05
7	XXX	XXX	5	102	156	0.05	0.05
7,1	–	XXX	5	102	156	–	0.05
7,3	–	XXX	5	102	156	–	0.05
7,4	–	XXX	5	102	156	–	0.05
7,5	XXX	XXX	5	102	156	0.05	0.05
7,6	–	XXX	5	109	165	–	0.05
7,7	–	XXX	5	109	165	–	0.05
7,8	XXX	XXX	5	109	165	0.05	0.05
7,9	–	XXX	5	109	165	–	0.05
8	XXX	XXX	5	109	165	0.08	0.08
8,1	–	XXX	5	109	165	–	0.08
8,2	XXX	XXX	5	109	165	0.08	0.08
8,3	–	XXX	5	109	165	–	0.08
8,4	–	XXX	5	109	165	–	0.08
8,5	XXX	XXX	5	109	165	0.08	0.08
8,6	–	XXX	5	115	175	–	0.08
8,7	–	XXX	5	115	175	–	0.08
8,8	–	XXX	5	115	175	–	0.08
8,9	–	XXX	5	115	175	–	0.08
9	XXX	XXX	5	115	175	0.08	0.08
9,1	–	XXX	5	115	175	–	0.08
9,2	–	XXX	5	115	175	–	0.08
9,3	–	XXX	5	115	175	–	0.08
9,4	–	XXX	5	115	175	–	0.08
9,5	XXX	XXX	5	115	175	0.08	0.08
9,6	–	XXX	5	121	184	–	0.08
9,7	–	XXX	5	121	184	–	0.08
9,8	XXX	XXX	5	121	184	0.08	0.08
9,9	–	XXX	5	121	184	–	0.08
10	XXX	XXX	5	121	184	0.08	0.08
10,2	XXX	XXX	1	121	184	0.08	0.08
10,5	XXX	XXX	1	121	184	0.08	0.08
10,8	–	XXX	1	128	195	–	0.08
11	XXX	XXX	1	128	195	0.08	0.08
11,2	–	XXX	1	128	195	–	0.08
11,5	XXX	XXX	1	128	195	0.08	0.08
11,8	–	XXX	1	128	195	–	0.08
12	XXX	XXX	1	134	205	0.12	0.12

DIN 1869 | h8 | 38° | 2

Garant Extra long jobber drills, plain shank

With precision ground point.

11 6240 – Significantly strengthened core without core taper. Bright finish flutes, nitrided chamfers.

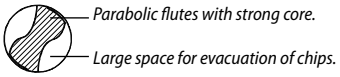
11 6245 – Vaporised high performance drills for drilling particularly deep holes. Take particular care to ensure **frequent chip clearance.**

11 6250 – Special 4-chamfer relief ground for very good guidance within the bore. Bright finish flutes, nitrided chamfers.

Advantage:

11 6240/6250 – **Special deep hole drills. For particularly deep or recessed holes.**
Good chip evacuation due to parabolic flutes, resulting in fewer chip evacuations even in particularly deep holes.

Recommendation: Maximum drilling depth:
flute length (see table) less 1.5×nominal ∅.



116240/6250 type FS

HSS | Type FS | 130°

11 6240

HSS | Type N | 118°

11 6245

new

HSS E | Type FS | 130°

11 6250

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	Graphite GRP CRP					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	K	N					
11 6240	50	32		28	21												18		●	●			
11 6245	50	32		28	21	18	5										18		●	●			
11 6250	55	30		32	25	20	5							8	4		20		●	●			

∅ h8× Overall length	11B 11 6240 Jobber drill extra long HSS FS	11B 11 6240 Jobber drill extra long HSS N	11B 11 6245 Jobber drill extra long HSS FS	11B 11 6250 Jobber drill, extra long HSS-E FS		L_{tot}	< 750 N f
mm					mm	mm	mm/rev.
2×125	–	XXX	–		85	125	0.03
2,5×140	–	XXX	–		95	140	0.05
2,5×225	XXX	XXX	XXX		150	225	0.05
3×150	XXX	XXX	XXX		100	150	0.05
3×190	XXX	XXX	XXX		130	190	0.05
3,5×165	XXX	XXX	XXX		115	165	0.05
3,5×210	XXX	XXX	XXX		145	210	0.05
3,5×265	–	XXX	–		180	265	0.05
4×175	XXX	XXX	XXX		120	175	0.05
4×220	XXX	XXX	XXX		150	220	0.05
4×280	XXX	XXX	XXX		190	280	0.05
4,2×175	–	XXX	–		120	175	0.05
4,2×220	–	XXX	–		150	220	0.05
4,2×280	–	XXX	–		190	280	0.05
4,5×185	XXX	XXX	XXX		125	185	0.05
4,5×235	XXX	XXX	XXX		160	235	0.05
4,8×195	–	XXX	–		135	195	0.05
4,9×195	–	XXX	–		135	195	0.05
5×195	XXX	XXX	XXX		135	195	0.07
5×245	XXX	XXX	XXX		170	245	0.07
5×315	XXX	XXX	XXX		210	315	0.07
5,5×205	XXX	XXX	XXX		140	205	0.07
5,5×260	XXX	XXX	XXX		180	260	0.07
5,5×330	–	XXX	–		225	330	0.07
5,8×205	–	XXX	–		140	205	0.07
6×205	XXX	XXX	XXX		140	205	0.07
6×260	XXX	XXX	XXX		180	260	0.07
6×330	XXX	XXX	XXX		225	330	0.07
6,2×215	–	XXX	–		150	215	0.07
6,2×350	–	XXX	–		235	350	0.07
6,5×215	–	XXX	–		150	215	0.07
6,5×275	XXX	XXX	XXX		190	275	0.07
6,5×350	–	XXX	–		235	350	0.07
6,8×225	XXX	XXX	XXX		155	225	0.07
6,8×370	–	XXX	–		250	370	0.07
7×225	XXX	XXX	XXX		155	225	0.07
7×290	XXX	XXX	XXX		200	290	0.07
7×370	–	XXX	–		250	370	0.07

∅ h8× Overall length	11B 11 6240 Jobber drill extra long HSS FS	11B 11 6240 Jobber drill extra long HSS N	11B 11 6245 Jobber drill extra long HSS FS	11B 11 6250 Jobber drill, extra long HSS-E FS		L_{tot}	< 750 N f
mm					mm	mm	mm/rev.
7,5×225	XXX	XXX	XXX		155	225	0.07
7,5×290	XXX	XXX	XXX		200	290	0.07
7,5×370	–	XXX	–		250	370	0.07
8×240	XXX	XXX	XXX		165	240	0.1
8×305	XXX	XXX	XXX		210	305	0.1
8×390	XXX	XXX	XXX		265	390	0.1
8,5×240	XXX	XXX	XXX		165	240	0.1
8,5×305	XXX	XXX	XXX		210	305	0.1
8,5×390	–	XXX	–		265	390	0.1
9×250	XXX	XXX	XXX		175	250	0.1
9×320	XXX	XXX	XXX		220	320	0.1
9×410	–	XXX	–		280	410	0.1
9,5×250	–	XXX	–		175	250	0.1
9,5×320	XXX	XXX	XXX		220	320	0.1
9,5×410	–	XXX	–		280	410	0.1
10×265	XXX	XXX	XXX		185	265	0.1
10×340	XXX	XXX	XXX		235	340	0.1
10×430	XXX	XXX	XXX		295	430	0.1
10,2×340	XXX	XXX	XXX		235	340	0.1
10,5×265	–	XXX	–		185	265	0.1
10,5×340	–	XXX	–		235	340	0.1
10,5×430	–	XXX	–		295	430	0.1
11×280	–	XXX	–		195	280	0.1
11×365	–	XXX	–		250	365	0.1
11×455	–	XXX	–		310	455	0.1
11,5×280	–	XXX	–		195	280	0.1
11,5×365	–	XXX	–		250	365	0.1
11,5×455	–	XXX	–		310	455	0.1
12×295	–	XXX	–		205	295	0.1
12×375	–	XXX	–		260	375	0.1
12×480	–	XXX	–		330	480	0.1
12,5×295	–	XXX	–		205	295	0.1
12,5×375	–	XXX	–		260	375	0.1
12,5×480	–	XXX	–		330	480	0.1
13×295	–	XXX	–		205	295	0.1
13×375	–	XXX	–		260	375	0.1
13×480	–	XXX	–		330	480	0.1

HSS E | DIN 1869 | h8 | 38° | 2

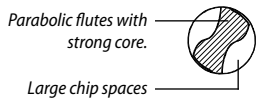
Extra long jobber drills plain shank HSS-E

Advantage:

11 6280 – **Particularly suitable for drilling under difficult conditions,** e.g. insufficient cooling of the cutting edges due to poor chip evacuation.

11 6285 – Flute length to DIN 340. For high-tensile tempered steels, **including TOOLOX.**

Recommendation: Maximum drilling depth: flute length (see table) less 1.5×nominal ∅.



116280
Type FS

Type FS | 135°

11 6280

Type N | 118°

11 6285

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	TOOLOX® 33 HRC	TOOLOX® 44 HRC	INOX < 900 N	INOX > 900 N	CuZn					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	H	H	M	M	N					
11 6280	60		38	38	28	22													●	●			
11 6285				38	28	22	7	5						10	8	10	5	70	●	●			

∅ h8×Overall length	11 6280 / 11 6285 Jobber drill, extra long HSS-E		L_{tot}	< 750 N f
	FS	N	11 6280 / 11 6285	
mm	TiAlN	TiAlN	mm	mm/rev.
3×150	XXX	XXX	100 / 66	150	0.05
3×190	XXX	–	130 / –	190	0.05
3,5×165	XXX	–	115 / –	165	0.05
3,5×210	XXX	–	145 / –	210	0.05
4×175	XXX	XXX	120 / 78	175	0.05
4×220	XXX	–	150 / –	220	0.05
4×280	XXX	XXX	190 / 78	280	0.05
4,5×185	XXX	–	125 / –	185	0.05
4,5×235	XXX	–	160 / –	235	0.05
5×195	XXX	XXX	135 / 87	195	0.07
5×245	XXX	–	170 / –	245	0.07
5×315	XXX	XXX	210 / 87	315	0.07
5,5×205	XXX	–	140 / –	205	0.07
5,5×260	XXX	–	180 / –	260	0.07
6×205	XXX	XXX	140 / 91	205	0.07
6×260	XXX	–	180 / –	260	0.07
6×330	XXX	XXX	225 / 91	330	0.07

∅ h8×Overall length	11 6280 / 11 6285 Jobber drill, extra long HSS-E				L_{tot}	< 750 N f
	FS	N	11 6280	11 6285		
mm	TiAlN	TiAlN	mm	mm	mm	mm/rev.
6,5×275	XXX	–	190	–	275	0.07
6,8×225	XXX	–	155	–	225	0.07
7×225	XXX	–	155	–	225	0.07
7×290	XXX	–	200	–	290	0.07
7,5×290	XXX	–	200	–	290	0.07
8×240	XXX	XXX	165	109	240	0.1
8×305	XXX	–	210	–	305	0.1
8×390	XXX	XXX	265	109	390	0.1
8,5×240	XXX	–	165	–	240	0.1
8,5×305	XXX	–	210	–	305	0.1
9×250	XXX	–	175	–	250	0.1
9×320	XXX	–	220	–	320	0.1
9,5×320	XXX	–	220	–	320	0.1
10×265	XXX	XXX	185	121	265	0.1
10×340	XXX	–	235	–	340	0.1
10×430	XXX	XXX	295	121	430	0.1
10,2×340	XXX	–	235	–	340	0.1

HSS | DIN 1898 A | 118° | 1:50 | 2

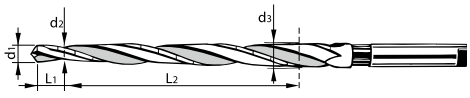
11 6310

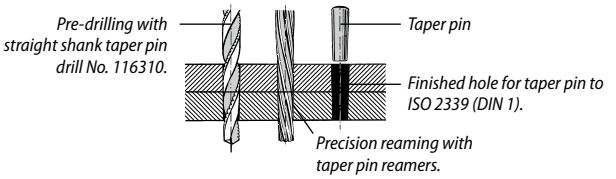
Taper pin drills, plain shank

Conically increasing cutting edges with chip breaker flutes on the circumference. Special surface treatment.

Advantage: Conical holes 1:50 for taper pins to ISO 2339 (DIN 1) and ISO 8736 (DIN 7978) can be drilled in a single operation.

Note: ∅1.5; 2; 2.5 available with plain shank on request.
∅14;16; 20; 25 available with MT shank on request.
For finishing use taper pin reamers No. 161200.





Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	Graphite GRP CRP	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	N						
11 6310				24	20														●	●			

Nominal ∅ d_1	11 6310 Straight shank taper pin drill	smallest ∅ d_2	largest ∅ d_3	L_1	L_2	L_{tot}		< 750 N f
mm		mm	mm	mm	mm	mm	mm	mm/rev.
3	XXX	2.9	4.06	5	58	100	4	0.05
4	XXX	3.9	5.26	5	68	112	5	0.05
5	XXX	4.9	6.36	5	73	122	6.3	0.05
6	XXX	5.9	8	5	105	160	8	0.05

Nominal ∅ d_1	11 6310 Straight shank taper pin drill	smallest ∅ d_2	largest ∅ d_3	L_1	L_2	L_{tot}		< 750 N f
mm		mm	mm	mm	mm	mm	mm	mm/rev.
8	XXX	7.9	10.8	5	145	207	10	0.05
10	XXX	9.9	13.4	5	175	245	12.5	0.07
12	XXX	11.8	16	10	210	290	16	0.07

HSS | DIN 345 | Type N | h8 | 118° | 20-30° | 2

Jobber drills with Morse taper shank

Special surface treatment, resulting in reduced tendency to edge build-up **and improved chip evacuation.**

11 6340 – **Top quality high performance twist drills.**
Cutting edge section ≤ 26.5 mm Ø ground from solid, > 26.5 mm Ø milled. This ensures high concentricity and pitch accuracy, and precision ground point up to 40 mm Ø.

116340

116320

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	Graphite GRP CRP					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	K	N					
11 6340		45		40	30	25											25		●	●			
11 6320				40	30	25											25		●	●			

Ø h8	11C 11 6340 Garant	12C 11 6320 HOLEX					Ø h8	11C 11 6340 Garant	12C 11 6320 HOLEX				
	HSS jobber drill				< 750 N			HSS jobber drill				< 750 N	
mm	N		mm	L_{tot} mm	MT	f mm/rev.	mm	N		mm	L_{tot} mm	MT	f mm/rev.
5	XXX	–	52	133	1	0.07	22	XXX	XXX	150	248	2	0.2
5,5	XXX	–	57	138	1	0.07	22,25	XXX	–	150	248	2	0.2
6	XXX	–	57	138	1	0.07	22,5	XXX	XXX	155	253	2	0.2
6,5	XXX	–	63	144	1	0.07	22,75	XXX	–	155	253	2	0.2
7	XXX	–	69	150	1	0.07	23	XXX	XXX	155	253	2	0.2
7,5	XXX	–	69	150	1	0.07	23,5	XXX	XXX	155	276	3	0.2
8	XXX	–	75	156	1	0.1	23,75	XXX	–	160	281	3	0.2
8,5	XXX	–	75	156	1	0.1	24	XXX	XXX	160	281	3	0.2
9	XXX	–	81	162	1	0.1	24,5	XXX	XXX	160	281	3	0.2
9,5	XXX	–	81	162	1	0.1	24,75	XXX	–	160	281	3	0.2
9,8	XXX	–	87	168	1	0.1	25	XXX	XXX	160	281	3	0.25
10	XXX	–	87	168	1	0.1	25,5	XXX	XXX	165	286	3	0.25
10,25	XXX	–	87	168	1	0.1	25,75	XXX	–	165	286	3	0.25
10,5	XXX	–	87	168	1	0.1	26	XXX	XXX	165	286	3	0.25
10,75	XXX	–	94	175	1	0.1	26,5	XXX	XXX	165	286	3	0.25
11	XXX	–	94	175	1	0.1	27	XXX	XXX	170	291	3	0.25
11,25	XXX	–	94	175	1	0.1	27,5	XXX	XXX	170	291	3	0.25
11,5	XXX	–	94	175	1	0.1	27,75	XXX	–	170	291	3	0.25
11,75	XXX	–	94	175	1	0.1	28	XXX	XXX	170	291	3	0.25
12	XXX	–	101	182	1	0.16	28,5	XXX	XXX	175	296	3	0.25
12,25	XXX	–	101	182	1	0.16	29	XXX	XXX	175	296	3	0.25
12,5	XXX	–	101	182	1	0.16	29,5	XXX	XXX	175	296	3	0.25
12,75	XXX	–	101	182	1	0.16	29,75	XXX	–	175	296	3	0.25
13	XXX	XXX	101	182	1	0.16	30	XXX	XXX	175	296	3	0.25
13,25	XXX	–	108	189	1	0.16	30,5	XXX	XXX	180	301	3	0.25
13,5	XXX	XXX	108	189	1	0.16	31	XXX	XXX	180	301	3	0.25
13,75	XXX	XXX	108	189	1	0.16	31,5	XXX	–	180	301	3	0.25
14	XXX	XXX	108	189	1	0.16	32	XXX	XXX	185	334	4	0.25
14,25	XXX	XXX	114	212	2	0.16	32,5	XXX	–	185	334	4	0.25
14,5	XXX	XXX	114	212	2	0.16	33	XXX	XXX	185	334	4	0.25
14,75	XXX	–	114	212	2	0.16	33,5	XXX	–	185	334	4	0.25
15	XXX	XXX	114	212	2	0.16	34	XXX	XXX	190	339	4	0.25
15,25	XXX	XXX	120	218	2	0.16	34,5	XXX	–	190	339	4	0.25
15,5	XXX	XXX	120	218	2	0.16	35	XXX	XXX	190	339	4	0.25
15,75	XXX	XXX	120	218	2	0.16	35,5	XXX	–	190	339	4	0.25
16	XXX	XXX	120	218	2	0.2	36	XXX	XXX	195	344	4	0.25
16,25	XXX	XXX	125	223	2	0.2	37	XXX	–	195	344	4	0.25
16,5	XXX	XXX	125	223	2	0.2	37,5	XXX	–	195	344	4	0.25
16,75	XXX	XXX	125	223	2	0.2	38	XXX	XXX	200	349	4	0.25
17	XXX	XXX	125	223	2	0.2	38,5	XXX	–	200	349	4	0.25
17,25	XXX	XXX	130	228	2	0.2	39	XXX	XXX	200	349	4	0.25
17,5	XXX	XXX	130	228	2	0.2	39,5	XXX	–	200	349	4	0.25
17,75	XXX	XXX	130	228	2	0.2	40	XXX	XXX	200	349	4	0.32
18	XXX	XXX	130	228	2	0.2	40,5	XXX	–	205	354	4	0.32
18,25	XXX	–	135	233	2	0.2	41	XXX	XXX	205	354	4	0.32
18,5	XXX	XXX	135	233	2	0.2	42	XXX	XXX	205	354	4	0.32
18,75	XXX	–	135	233	2	0.2	43	XXX	XXX	210	359	4	0.32
19	XXX	XXX	135	233	2	0.2	44	XXX	XXX	210	359	4	0.32
19,25	XXX	–	140	238	2	0.2	45	XXX	XXX	210	359	4	0.32
19,5	XXX	XXX	140	238	2	0.2	46	XXX	XXX	215	364	4	0.32
19,75	XXX	XXX	140	238	2	0.2	47	(XXX)	XXX	215	364	4	0.32
20	XXX	XXX	140	238	2	0.2	48	XXX	XXX	220	369	4	0.32
20,25	XXX	–	145	243	2	0.2	49	XXX	XXX	220	369	4	0.32
20,5	XXX	XXX	145	243	2	0.2	50	XXX	XXX	220	369	4	0.32
20,75	XXX	–	145	243	2	0.2	51	XXX	XXX	225	412	5	0.32
21	XXX	XXX	145	243	2	0.2	55	XXX	XXX	230	417	5	0.32
21,25	XXX	–	150	248	2	0.2	60	XXX	XXX	235	422	5	0.32
21,5	XXX	XXX	150	248	2	0.2	65	XXX	XXX	245	432	5	0.4
21,75	XXX	XXX	150	248	2	0.2	70	XXX	XXX	250	437	5	0.4

HSS E | DIN 345 | Type S/STL | h8 | 135° | 35-40° | 2

Garant Jobber drill with Morse taper shank, for high-tensile and stainless steels

With strengthened core.
Specially treated surface, reducing edge build up and improving chip evacuation.

11 6360

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	Ti > 850 N	GG(G)	CuZn	Uni
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	S	K	N	
11 6360				40	30	25	10							12	5	25	80	○

Ø h8	11C	11 6360 Jobber drill HSS-E		L_{tot}	MT	< 750 N f
mm		VA	mm	mm		mm/rev.
10		XXX	87	168	1	0.1
10,2		XXX	87	168	1	0.1
10,5		XXX	87	168	1	0.1
11		XXX	94	175	1	0.1
11,5		XXX	94	175	1	0.1
11,8		XXX	94	175	1	0.1
12		XXX	101	182	1	0.16
12,2		XXX	101	182	1	0.16
12,5		XXX	101	182	1	0.16
13		XXX	101	182	1	0.16
13,5		XXX	108	189	1	0.16
13,8		XXX	108	189	1	0.16
14		XXX	108	189	1	0.16
14,25		XXX	114	212	2	0.16
14,5		XXX	114	212	2	0.16
15		XXX	114	212	2	0.16
15,25		XXX	120	218	2	0.16
15,5		XXX	120	218	2	0.16
15,75		XXX	120	218	2	0.16
16		XXX	120	218	2	0.2
16,25		XXX	125	223	2	0.2
16,5		XXX	125	223	2	0.2
17		XXX	125	223	2	0.2
17,5		XXX	130	228	2	0.2
17,75		XXX	130	228	2	0.2
18		XXX	130	228	2	0.2
18,5		XXX	135	233	2	0.2

Ø h8	11C	11 6360 Jobber drill HSS-E		L_{tot}	MT	< 750 N f
mm		VA	mm	mm		mm/rev.
18,75		(XXX)	135	233	2	0.2
19		XXX	135	233	2	0.2
19,5		XXX	140	238	2	0.2
19,75		XXX	140	238	2	0.2
20		XXX	140	238	2	0.2
20,5		XXX	145	243	2	0.2
21		XXX	145	243	2	0.2
21,5		XXX	150	248	2	0.2
22		XXX	150	248	2	0.2
22,5		XXX	155	253	2	0.2
23		XXX	155	253	2	0.2
23,5		XXX	155	276	3	0.2
24		XXX	160	281	3	0.2
24,5		XXX	160	281	3	0.2
25		XXX	160	281	3	0.25
25,5		XXX	165	286	3	0.25
26		XXX	165	286	3	0.25
26,5		XXX	165	286	3	0.25
27		XXX	170	291	3	0.25
28		XXX	170	291	3	0.25
29,5		XXX	175	296	3	0.25
30		XXX	175	296	3	0.25
30,5		(XXX)	180	301	3	0.25
32		XXX	185	334	4	0.25
33		(XXX)	185	334	4	0.25
35		XXX	190	339	4	0.25

HSS Co8 | Standard | Type H | h8 | 130° | 8-15° | 2

Garant Stub jobber drills with Morse taper shank, for difficult to machine materials

Particularly sturdy due to **extra short drilling section** and partly with larger MT. Strengthened core.

11 6380

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	HARDOX® 500 < 1600 N	INOX < 900 N	INOX > 900 N	Ti > 850 N	Graphite GRP CRP
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	H	M	M	S	N
11 6380							10	8						5			5	

Ø h8	11C	11 6380 Jobber drill HSS-E for Hardox		L_{tot}	MT	< 1400 N f
mm		H	mm	mm		mm/rev.
8,5		XXX	43	124	1	0.08
10		XXX	50	131	1	0.08
10,5		XXX	50	131	1	0.08
12		XXX	59	157	2	0.12
13		XXX	59	157	2	0.12
14		XXX	63	161	2	0.12
17		XXX	73	171	2	0.14
17,5		XXX	77	175	2	0.14

Ø h8	11C	11 6380 Jobber drill HSS-E for Hardox		L_{tot}	MT	< 1400 N f
mm		H	mm	mm		mm/rev.
18		XXX	77	175	2	0.14
20		XXX	83	204	3	0.14
21		XXX	87	208	3	0.14
22		XXX	90	211	3	0.14
25		XXX	98	219	3	0.18
26		XXX	103	224	3	0.18
30		XXX	112	261	4	0.18

HSS | DIN 343 | Type N | h8 | 120° | 3

Garant

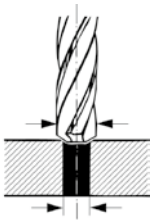
Core drill with Morse taper shank

Strong core. Sturdy jobber drill for better guidance in the hole

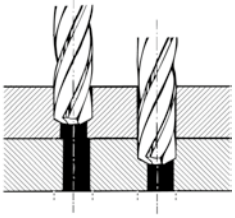
Advantage: Particularly suitable **for drilling out** holes that are out of round. Misaligned holes can be aligned.

Note: **Please note:** Do not drill the respective tapping hole Ø (see table) less than the stated size.

11 6620



For pilot hole (D_{min}) see table.



Misaligned holes can be realigned using the core drill.

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	K						
11 6620		45		**40**	**30**	**25**	10	8						12			25	○		●			

Ø h8	11C	11 6620		L_{tot}	Min. pre-drilling -Ø D_{min}	MT	< 750 N f
		HSS core drill					
mm		N	mm	mm	mm		mm/rev.
7,8		XXX	75	156	5.6	1	0.1
8,8		(XXX)	81	162	6.3	1	0.11
9,7		(XXX)	87	168	7	1	0.12
9,8		XXX	87	168	7	1	0.12
10		(XXX)	87	168	7	1	0.12
10,75		XXX	94	175	7.7	1	0.13
11		(XXX)	94	175	7.7	1	0.13
11,5		(XXX)	94	175	7.7	1	0.13
11,75		XXX	101	182	8.4	1	0.14
12		XXX	101	182	8.4	1	0.14
12,5		(XXX)	101	182	8.4	1	0.14
12,75		XXX	101	182	9.1	1	0.15
13		(XXX)	101	182	9.1	1	0.15
13,5		(XXX)	108	189	9.8	1	0.15
13,75		XXX	108	189	9.1	1	0.15
14		XXX	108	189	9.8	1	0.16
14,5		(XXX)	114	212	10.5	2	0.16
14,75		XXX	114	212	10.5	2	0.16
15		XXX	114	212	10.5	2	0.16
15,25		(XXX)	120	218	11.2	2	0.17
15,5		(XXX)	120	218	11.2	2	0.17
15,75		XXX	120	218	11.2	2	0.17
16		XXX	120	218	11.2	2	0.17
16,2		(XXX)	125	223	11.9	2	0.17
16,5		(XXX)	125	223	11.9	2	0.18
16,75		XXX	125	223	11.9	2	0.18
17		(XXX)	125	223	11.9	2	0.18
17,5		(XXX)	130	228	12.6	2	0.18
17,75		XXX	130	228	12.6	2	0.19
18		XXX	130	228	12.6	2	0.19
18,25		(XXX)	135	233	13.3	2	0.19
18,5		(XXX)	135	233	13.3	2	0.19
18,7		XXX	135	233	13.3	2	0.19
19		(XXX)	135	233	13.3	2	0.2
19,25		(XXX)	140	238	14	2	0.2
19,5		(XXX)	140	238	14	2	0.2
19,7		XXX	140	238	14	2	0.2
19,75		(XXX)	140	238	14	2	0.2
20		XXX	140	238	14	2	0.2
20,25		(XXX)	145	243	14.6	2	0.21

Ø h8	11C	11 6620		L_{tot}	Min. pre-drilling -Ø D_{min}	MT	< 750 N f
		HSS core drill					
mm		N	mm	mm	mm		mm/rev.
20,5		(XXX)	145	243	14.6	2	0.21
20,7		XXX	145	243	14.6	2	0.21
21		(XXX)	145	243	14.6	2	0.21
21,5		(XXX)	150	248	15.3	2	0.22
21,7		XXX	150	248	15.3	2	0.22
22		(XXX)	150	248	15.3	2	0.22
22,5		(XXX)	155	253	16	2	0.22
22,7		(XXX)	155	253	16	2	0.23
23		(XXX)	155	253	16	2	0.23
23,7		(XXX)	160	281	16.6	3	0.23
24		(XXX)	160	281	16.6	3	0.24
24,5		(XXX)	160	281	17.3	3	0.24
24,7		XXX	160	281	17.3	3	0.24
24,75		(XXX)	160	281	17.3	3	0.24
25		(XXX)	160	281	17.3	3	0.24
25,7		(XXX)	165	286	18	3	0.25
26		XXX	165	286	18	3	0.25
27		(XXX)	170	291	18.6	3	0.26
27,7		(XXX)	170	291	19.3	3	0.26
28		(XXX)	170	291	19.3	3	0.26
28,7		(XXX)	175	296	20	3	0.27
29,7		XXX	175	296	20.5	3	0.28
30		XXX	175	296	20.5	3	0.28
30,5		(XXX)	180	301	21	3	0.28
30,6		(XXX)	180	301	21	3	0.28
31		(XXX)	180	301	21	3	0.29
31,6		(XXX)	185	334	22	4	0.29
32		(XXX)	185	334	22	4	0.29
32,6		(XXX)	185	334	23	4	0.3
33		(XXX)	185	334	23	4	0.3
33,6		(XXX)	190	339	24	4	0.3
34		(XXX)	190	339	24	4	0.31
34,6		(XXX)	190	339	25	4	0.31
35		(XXX)	190	339	25	4	0.31
35,6		(XXX)	195	344	25.5	4	0.32
36		(XXX)	195	344	25.5	4	0.32
39,6		(XXX)	200	349	28	4	0.34
40		(XXX)	200	349	28	4	0.35
50		(XXX)	220	369	34.5	4	0.41

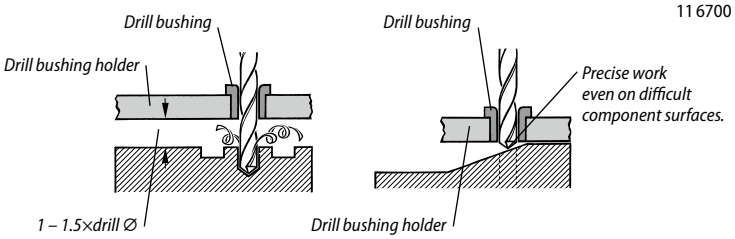
HSS | DIN 341 | Type N | h8 | 118° | 16-30° | 2

Garant Long jobber drills (bushing drill) with Morse taper shank

Compared to DIN 345 the flute length is longer by the drill bushing height. Thus the effective drilling depth is unaffected. Special surface treatment for improved chip evacuation.

Advantage: **For drilling through drill bushings** in tool making, machine building and series production. Particularly important for drilling into uneven, inclined or arched surfaces.

11 6700



Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	Graphite GRP CRP					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	K	N					
11 6700				40	30	25											25		●	●			

Ø h8	11C	11 6700 Jobber drill long HSS		L_{tot}	MT	< 750 N f
mm		N	mm	mm		mm/rev.
10		XXX	116	197	1	0.1
10,5		XXX	116	197	1	0.1
11		XXX	125	206	1	0.1
11,5		XXX	125	206	1	0.1
12		XXX	134	215	1	0.16
12,5		XXX	134	215	1	0.16
13		XXX	134	215	1	0.16
13,5		XXX	142	223	1	0.16
14		XXX	142	223	1	0.16
14,5		XXX	147	245	2	0.16
15		XXX	147	245	2	0.16
15,5		XXX	153	251	2	0.16
16		XXX	153	251	2	0.16

Ø h8	11C	11 6700 Jobber drill long HSS		L_{tot}	MT	< 750 N f
mm		N	mm	mm		mm/rev.
16,5		XXX	159	257	2	0.2
17		XXX	159	257	2	0.2
17,5		XXX	165	263	2	0.2
18		XXX	165	263	2	0.2
18,5		XXX	171	269	2	0.2
19		XXX	171	269	2	0.2
19,5		XXX	177	275	2	0.2
20		XXX	177	275	2	0.2
20,5		XXX	184	282	2	0.2
21		XXX	184	282	2	0.2
22		XXX	191	289	2	0.2
22,5		(XXX)	198	296	2	0.2
23		XXX	198	296	2	0.2

Ø h8	11C	11 6700 Jobber drill long HSS		L_{tot}	MT	< 750 N f
mm		N	mm	mm		mm/rev.
24		XXX	206	327	3	0.2
25		XXX	206	327	3	0.25
26		XXX	214	335	3	0.25
27		XXX	222	343	3	0.25
28		XXX	222	343	3	0.25
30		XXX	230	351	3	0.25
31		XXX	239	360	3	0.25
32		XXX	248	397	4	0.25
33		XXX	248	397	4	0.25
35		XXX	257	406	4	0.25
40		XXX	277	426	4	0.32
45		(XXX)	298	447	4	0.32
50		XXX	321	470	4	0.32

HSS | Type FS | h8 | 130° | 2 | DIN 1870 R1 | DIN 1870 R2

Garant Extra long jobber drills with Morse taper shank

High concentricity.
Large section parabolic flutes; strong due to strengthened core thickness (without core taper).
≤ 16 mm Ø: Bright finish flutes, nitrided lands; > 16 mm Ø: Specially treated surface.
Special sturdy drills **for extremely deep holes.** Up to approx. 15×Ø without drill withdrawal.

11 6720

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	Graphite GRP CRP	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	N						
11 6720				40	30	25													●	●			

Ø h8	11C	11 6720 Jobber drill extra long HSS		L_{tot}	MT	< 750 N f
mm		FS	mm	mm		mm/rev.
10R1		XXX	185	285	1	0.1
10R2		(XXX)	235	360	1	0.1
10,5R2		(XXX)	235	360	1	0.1
11R1		XXX	195	300	1	0.1
11R2		XXX	250	375	1	0.1
11,5R2		XXX	250	375	1	0.1
12R1		XXX	205	310	1	0.16
12R2		XXX	260	395	1	0.16
12,5R2		(XXX)	260	395	1	0.16
13R1		XXX	205	310	1	0.16
13R2		(XXX)	260	395	1	0.16
13,5R2		XXX	275	410	1	0.16

Ø h8	11C	11 6720 Jobber drill extra long HSS		L_{tot}	MT	< 750 N f
mm		FS	mm	mm		mm/rev.
14R1		XXX	220	325	1	0.16
14R2		XXX	275	410	1	0.16
15R1		XXX	220	340	2	0.16
15R2		XXX	275	425	2	0.16
16R1		XXX	230	355	2	0.2
16R2		XXX	295	445	2	0.2
17R1		XXX	220	355	2	0.2
17,5R2		XXX	310	465	2	0.2
18R1		XXX	245	370	2	0.2
18R2		(XXX)	310	465	2	0.2
19R1		XXX	245	370	2	0.2
20R1		XXX	260	385	2	0.2

Ø h8	11C	11 6720 Jobber drill extra long HSS		L_{tot}	MT	< 750 N f
mm		FS	mm	mm		mm/rev.
20R2		XXX	325	490	2	0.2
21R1		XXX	260	385	2	0.2
21R2		(XXX)	325	490	2	0.2
22R1		XXX	270	405	2	0.2
24R1		XXX	290	440	3	0.2
24R2		(XXX)	365	555	3	0.2
25R1		XXX	290	440	3	0.25
25R2		(XXX)	365	555	3	0.25
26R1		XXX	290	440	3	0.25
26R2		(XXX)	365	555	3	0.25
28R1		(XXX)	305	460	3	0.25
30R1		(XXX)	305	460	3	0.25

HSS | Type N | h8 | 118° | 16-30° | 2 | DIN 1870 R1 | DIN 1870 R2

Garant Extra long jobber drills with Morse taper shank

High concentricity. Core thickness and core taper are standard.
Special surface treatment.
Precision ground point. When drilling deep holes, evacuate chips from the hole frequently, and ensure adequate cooling.
Economy version with standard flutes.

11 6760

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	Graphite GRP CRP					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	K	N					
11 6760				40	30	25											25		●	●			

Ø h8	11C 11 6760 Jobber drill extra long HSS		L_{tot}	MT	< 750 N f
mm	N	mm	mm		mm/rev.
8R1	XXX	165	265	1	0.1
9R1	(XXX)	175	275	1	0.1
9R2	(XXX)	220	345	1	0.1
10R1	XXX	185	285	1	0.1
10R2	(XXX)	235	360	1	0.1
10,5R2	XXX	235	360	1	0.1
11R1	XXX	195	300	1	0.1
11R2	XXX	250	375	1	0.1
11,5R2	XXX	250	375	1	0.1
12R1	XXX	205	310	1	0.16
12R2	XXX	260	395	1	0.16
12,5R2	XXX	260	395	1	0.16
13R1	XXX	205	310	1	0.16
13R2	XXX	260	395	1	0.16
13,5R2	XXX	275	410	1	0.16
14R1	XXX	220	325	1	0.16
14R2	XXX	275	410	1	0.16
14,5R2	XXX	275	425	2	0.16
15R1	XXX	220	340	2	0.16
15R2	XXX	275	425	2	0.16

Ø h8	11C 11 6760 Jobber drill extra long HSS		L_{tot}	MT	< 750 N f
mm	N	mm	mm		mm/rev.
15,5R2	XXX	295	445	2	0.16
16R1	XXX	230	355	2	0.2
16R2	XXX	295	445	2	0.2
16,5R2	XXX	295	445	2	0.2
17R1	XXX	230	355	2	0.2
17R2	XXX	295	445	2	0.2
17,5R2	(XXX)	310	465	2	0.2
18R1	XXX	245	370	2	0.2
18R2	XXX	310	465	2	0.2
19R1	XXX	245	370	2	0.2
20R1	XXX	260	385	2	0.2
20R2	XXX	325	490	2	0.2
21R1	XXX	260	385	2	0.2
22R1	XXX	270	405	2	0.2
22R2	XXX	345	515	2	0.2
23R1	(XXX)	270	405	2	0.2
24R1	XXX	290	440	3	0.2
26R1	XXX	290	440	3	0.25
30R1	(XXX)	305	460	3	0.25
30R2	XXX	385	580	3	0.25

HSS | DIN 1897 | h8 | 118° | h8 | 90°

Garant Stub stepped drills for tapping holes, 90° countersink

Very sturdy. Tight concentricity tolerances between drill Ø and counterbore Ø guarantee exact alignment.

11 7020 – Special surface treatment, resulting in reduced tendency to edge build-up and improved chip evacuation.

Advantage: **Hole and countersink are produced in one operation and precisely aligned.**

Application: **Particularly suitable for NC machines** due to high positional accuracy, excellent centring properties and great sturdiness.
The preceding centring operation can thus often be omitted.
For thread tapping drill holes to DIN 336 sheet 1 with 90° countersink.
In the following operation, the tap therefore does not have to cut into the sharp edge of the hole.

11 7020

11 7040

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	CuZn					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	K	N					
11 7020		45		40	30	25											25	80	●	●			
11 7040		56	50	50	37	31	12	10									31	80	●	●			

for threads	11C 11 7020	11C 11 7040		h8			L_{tot}		< 750 N f
	Stub stepped drill HSS 90°								
		TiAlN	mm	mm	mm	mm	mm	mm	mm/rev.
M3	XXX	XXX	2.5	3.4	8.8	20	52	3.4	0.03
M4	XXX	XXX	3.3	4.5	11.4	24	58	4.5	0.03
M5	XXX	XXX	4.2	5.5	13.6	28	66	5.5	0.07
M6	XXX	XXX	5	6.6	16.5	31	70	6.6	0.07
M8	XXX	XXX	6.8	9	21	40	84	9	0.1
M10	XXX	XXX	8.5	11	25.5	47	95	11	0.1
M12	XXX	XXX	10.2	13.5	30	54	107	13.5	0.16

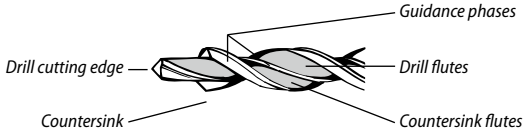
HSS | DIN 8378 | h9 | 118° | h8 | 20-30° | 90°

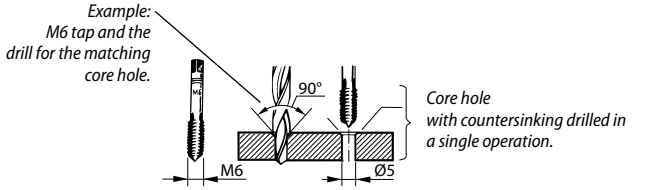
Garant Subland drill for tapping holes, 90° countersink

Drill and counterbore each with its own chip flutes and guide chamfers. This means the profile of the stepped drill is retained even after repeated regrinding.

Application: **Tapping hole and countersink** are produced **in one operation**, precisely aligned.
For drilling tapping holes to DIN 336 sheet 1 with 90° countersinking (similar to DIN 69, medium version).

11 7060





Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	CuZn					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	K	N					
11 7060		45		40	30	25											25	80	●	●			

for threads	11C 11 7060 Subland drill HSS 90°		h8			L_{tot}		< 750 N f
		mm	mm	mm	mm	mm	mm	mm/rev.
M3	XXX	2.5	3.4	8.8	39	70	3.4	0.03
M4	XXX	3.3	4.5	11.4	47	80	4.5	0.03
M5	XXX	4.2	5.5	13.6	57	93	5.5	0.07
M6	XXX	5	6.6	16.5	63	101	6.6	0.07
M8	XXX	6.8	9	21	81	125	9	0.1
M10	XXX	8.5	11	25.5	94	142	11	0.1
M12	XXX	10.2	13.5	30	108	160	13.5	0.16

HSS | DIN 1897 | h8 | 118° | h8 | 90°

Garant Stub subland drill for through holes, 90° (for countersunk screws)

Very sturdy. Tight concentricity tolerances between drill ∅ and counterbore ∅ guarantee exact alignment.
11 7120 – Special surface treatment, resulting in reduced tendency to edge build-up and improved chip evacuation.

Application: **Particularly suitable for NC machines** due to high positional accuracy, excellent centring properties and great sturdiness. The preceding centring operation can thus often be omitted.
For through holes for screws to DIN-ISO 273 and countersinks to DIN 74, sheet 1 form A, fine version.
For screws to ISO 2009, 2010, 7046, 7047 (DIN 963, 964, 965 and 966).

11 7120

11 7140

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	CuZn					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	K	N					
11 7120		45		40	30	25											25	80	●	●			
11 7140		56	50	50	37	31	12	10									31	80	●	●			

for screws	11C 11 7120 Stub subland drill HSS 90°	11C 11 7140 TiAlN	h8			L_{tot}		< 750 N f
			mm	mm	mm	mm	mm	mm/rev.
M3	XXX	XXX	3.2	6	9	28	66	6	0.03
M4	XXX	XXX	4.3	8	11	37	79	8	0.03
M5	XXX	XXX	5.3	10	13	43	89	10	0.07
M6	XXX	XXX	6.4	11.5	15	47	95	11.5	0.07
M8	XXX	XXX	8.4	15	19	56	111	15	0.1
M10	XXX	XXX	10.5	19	23	64	127	19	0.1

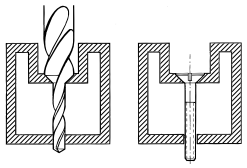
HSS E | Standard | ±0.05 | 118° | h8 | 90°

Stub subland drill for through holes, 90° (for countersunk screws)

With long drilling step.

Application: For through holes for screws to DIN-ISO 273 and countersinks to DIN 74, sheet 1 form A, medium version.
For screws to ISO 2009, 2010, 7046, 7047 (DIN 963, 964, 965 and 966).
Especially suitable for holes with simultaneous countersinking in the profile material.

11 7160



Through hole with counterbore for screw head drilled in a single operation.

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	CuZn					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	K	N					
11 7160	70	45		40	30	25											25	80	●	●			

for screws	11C	11 7160		h9			L_{tot}		< 750 N f
		Subland drill HSS-E **with long drilling step 90°**	mm	mm	mm	mm	mm	mm	mm/rev.
M4		XXX	4.3	8.6	30	55	110	8.6	0.03
M5		XXX	5.3	10.4	30	55	110	10.4	0.07
M6		XXX	6.4	12.4	30	55	110	12.4	0.07
M8		XXX	8.4	16.4	30	70	110	12.5	0.1
M10		XXX	10.5	20.4	30	70	110	12.5	0.1

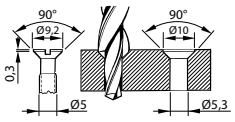
HSS | DIN 8374 | h9 | 118° | 20-30° | h8 | 90°

Subland drill for through holes, 90° (for countersunk screws)

Drill and counterbore each with its own chip flutes and guide chamfers. This means it can be reground many times.

Application: For through holes for screws to DIN-ISO 273 and countersinks to DIN 74, sheet 1 form A, fine version.
For countersunk screws to ISO 2009, 2010, 7046, 7047 (DIN 963, 964, 965 and 966).

11 7180



Example:
M5 countersunk screw and the appropriate subland drill No. 117180_M5.

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	CuZn					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	K	N					
11 7180		45		40	30	25											25	80	●	●			

for screws	11C	11 7180		h8			L_{tot}		< 750 N f
		Subland drill HSS **90°**	mm	mm	mm	mm	mm	mm	mm/rev.
M3		XXX	3.2	6	9	57	93	6	0.03
M4		XXX	4.3	8	11	75	117	8	0.03
M5		XXX	5.3	10	13	87	133	10	0.07
M6		XXX	6.4	11.5	15	94	142	11.5	0.07
M8		XXX	8.4	15	19	114	169	15	0.1
M10		XXX	10.5	19	23	135	198	19	0.1

HSS | DIN 1897 | h8 | 118° | h8 | 180°

Garant

Stub subland drills for through holes, 180° (for socket-head screws)

Very sturdy. Tight concentricity tolerances between drill Ø and counterbore Ø guarantee exact alignment.

11 7240 – Special surface treatment, resulting in reduced tendency to edge build-up and improved chip evacuation.

Application: For through holes for screws to DIN-ISO 273 and countersinking to DIN 74, sheet 2 form H, J and K, medium version.
For screws to DIN 912, 6912 and 7984, ISO 1207 (DIN 84).

11 7240

11 7260

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	CuZn					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	K	N					
11 7240		45		40	30	25											25	80	●	●			
11 7260		56	50	50	37	31	12	10									31	80	●	●			

for screws	11C 11 7240	11C 11 7260		h8			L_{tot}		< 750 N f
	Stub subland drill HSS 180°		mm	mm	mm	mm	mm	mm	mm/rev.
		TiAlN							
M3	XXX	XXX	3.4	6	9	28	66	6	0.03
M4	XXX	XXX	4.5	8	11	37	79	8	0.03
M5	XXX	XXX	5.5	10	13	43	89	10	0.07
M6	XXX	XXX	6.6	11	15	47	95	11	0.07
M8	XXX	XXX	9	15	19	56	111	15	0.1
M10	XXX	XXX	11	18	23	62	123	18	0.1

HSS | h9 | 118° | 20-30° | 180°

Garant

Subland drill for through holes, 180° (for socket-head screws)

Drill and counterbore each with its own chip flutes and guide chamfers. This means the profile of the stepped drill is retained even after repeated regrinding.

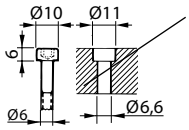
Application: For screw through holes to DIN-ISO 273 and screw head counterbores shape H, J, and K. Medium version to DIN 74 sheet 2.

11 7280

h8 | DIN 8376

11 7320

DIN 8377



Example:
Hole and counterbore for hexagon socket screws M6 DIN 912 and matching subland drill No. 11 7280_M6.

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	CuZn					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	K	N					
11 7280/7320		45		40	30	25											25	80	●	●			

for screws	11C 11 7280		h8			L_{tot}		< 750 N f
	Subland drill HSS 180°	mm	mm	mm	mm	mm	mm	mm/rev.
M3	XXX	3.4	6.5	9	63	101	6.5	0.03
M4	XXX	4.5	8	11	75	117	8	0.03
M5	XXX	5.5	10	13	87	133	10	0.07
M6	XXX	6.6	11	15	94	142	11	0.07
M8	XXX	9	15	19	114	169	15	0.1
M10	XXX	11	18	23	130	191	18	0.1

for screws	11C 11 7320		h8			L_{tot}	MT	< 750 N f
	Subland drill HSS 180°	mm	mm	mm	mm	mm		mm/rev.
M5	XXX	5.5	10	13	87	168	1	0.07
M6	XXX	6.6	11	15	94	175	1	0.07
M8	XXX	9	15	19	114	212	2	0.1
M10	XXX	11	18	23	130	228	2	0.1
M12	XXX	13.5	20	27	140	238	2	0.16
M14	XXX	15.5	24	31	160	281	3	0.16
M16	XXX	17.5	26	35	165	286	3	0.2
M20	XXX	22	33	43	185	334	4	0.2

Garant Precision taper sheet and tube drill

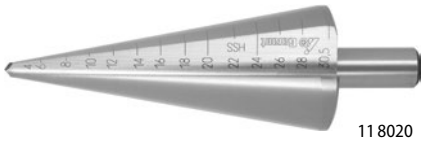
HSS | Standard

With sharp drill point, pre-drilling not necessary. Conically increasing cutting edges and radially relief ground circumference for a paring cut. With scale in the flutes. Three drive flats on the shank.

11 8030 – **TiN coating:** Higher cutting speeds and significantly longer tool life. Specially for soft materials with a tendency to smear.

11 8040 – **TiAlN coating for dry machining,** optimum tool life and highest cutting speeds. **Helical flutes** for reliable chip evacuation.

Application: Leaves no burr or chatter marks.
Sheet metal 0.1 – 2 mm, stainless steel 0.1 – 1 mm, non-ferrous metals: 0.1 – 5 mm, plastics up to 10 mm.



11 8020

11 8030

11 8040

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	K						
11 8020	○	○		●	●	●											●		●	●		○	
11 8030	○	○	○	●	●	●	●							●	○		●	○	●	●		○	
11 8040	○	○	○	●	●	●	●							●	○			○	○	○		●	

Cutter ∅		mm	3-14	8-20	16-30,5	4-30,5	26-40	36-50	46-60
11C 11 8020	Precision taper sheet and tube drill HSS		XXX	XXX	XXX	XXX	XXX	XXX	XXX
11C 11 8030	Precision taper sheet and tube drill HSS	TiN	XXX	XXX	XXX	XXX	XXX	XXX	XXX
11C 11 8040	Precision taper sheet drill with spiral flute HSS	TiAlN	–	XXX	–	XXX	–	–	–
Overall length		mm	58	62	71	102	83	95	96
Shank ∅		mm	6	8	10	10	12	13	13

Taper sheet and tube drill sets

HSS | Standard

With sharp drill point, pre-drilling not necessary. Conically increasing cutting edges and radially relief ground circumference for a paring cut. With scale in the flutes. Three drive flats on the shank.
Set of 3 conical sheet and tube drills and 1 cutting compound No. 118160 in a case.

Application: Leaves no burr or chatter marks.
Sheet metal 0.1 – 2 mm, stainless steel 0.1 – 1 mm, non-ferrous metals: 0.1 – 5 mm, plastics up to 10 mm.

11 8120

11 8130

Cutter ∅		mm	3-30,5
11C 11 8120	Precision taper sheet and tube drill set HSS No. 118020		XXX
11C 11 8130	Precision taper sheet and tube drill set HSS No. 118030	TiN	XXX
Content: 1x each taper sheet and tube drill			Size 3 -14; 8 – 20; 16 – 30.5
Cutting compound			No. 118160

Cutting compound

11 8160

11C 11 8160	Cutting compound ∅ 29 mm×91 mm	XXX

Garant Stepped drill

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	Graphite GRP CRP					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	K	N					
11 8320/8350				●	●	●								●			●		●	●		○	
11 8324				●	●	●								○					●	●		○	

Stepped drill

Standard

HSS E

11 8320_4-20

With cylindrical spotting drill, ∅ figures shown in the flute. Three drive flats on the shank.

11 8320 Size PG – Combination stepped drill (core **and** through holes) **for conduit threads** (to DIN40430) PG7; PG8; PG11; PG13,5; PG16; PG21

Size MF – Size MF combination stepped drill (core holes **and** through holes) **for metric fine threads** (to DIN 60423) M12×1.5; M16×1.5; M20×1.5; M25×1.5; M32×1.5; M40×1.5

Application: Drilling and deburring, maximum material thickness = step height (see table).

HSS E

11 8320_PG

HSS

11 8324_4-20

Cutter ∅		mm	4-12	4-20	6-30	9-36	12-20	20-30	30-40	40-50	50-60	PG	MF
11C 11 8320	Stepped drill HSS-E		XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
11C 11 8324	Stepped drill HSS	TiAlN	XXX	XXX	–	–	XXX	XXX	–	–	–	–	–
Step height		mm	6	4	4	4	4	4	5	5	5	4	4
Overall length		mm	79	70	100	85	75	88	98	112	119	93	94
Shank ∅		mm	6	9	10	12	9	12	13	13	13	12	12
Drill steps in increments of		mm	1	2	2	3	1	1	1	1	1	–	–

Stepped drill set

HSS E

Standard

Set of 3 stepped drills and 1 cutting compound No. 118160 in a case.

Application: Drilling and deburring of plain holes in material up to 4 / 6 mm strength.

11 8330

Cutter ∅		mm	4-30
11C 11 8330	Stepped drill set HSS-E No. 118320		XXX
Drill steps in increments of		mm	1
Content: 1× each stepped drill			Size 4–12, 12–20, 20–30
Cutting compound			No. 118160

Case

11 8340

11B 11 8340	Empty case for 3 stepped drills	XXX

Standard

HM

11 8400
11 8500

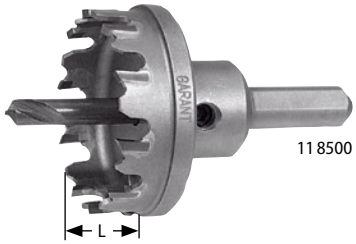
Carbide hole saw plain shank

Extremely strong and with perfect concentricity due to **drill crown and shank of one piece** (hardened).
Narrow carbide cutting edges with **positive rake** and **large clearance angle** provide good cutting performance at low cutting pressure.
Exchangeable centre drill, shank with 3 clamping faces.

11 8400 – Dimension L: **size ≤ 55 = 35 mm / size 60 = 60 mm.**
11 8500 – Dimension L: **all sizes = 8 mm.**
11 8505 – Cutting width 1.9 mm for all sizes. ∅ tolerance: **+ 0.15 / – 0.05 mm.**
Dimension L: **all sizes = 11.8 mm.**
11 8400/8500 – Cutting width 2 mm for all sizes. ∅ tolerance: **+ 0.10 / – 0.05 mm.**

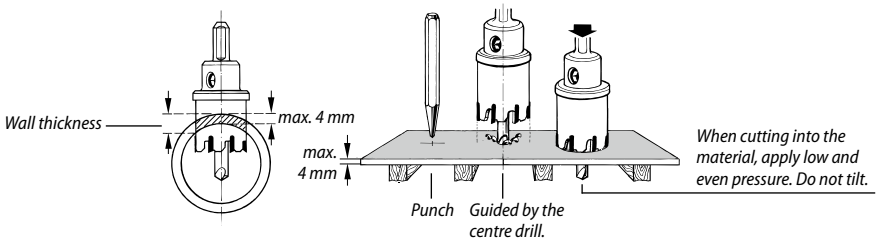
Application: For use on stationary machines. Suitable for fibre-reinforced plastics (GRP and CRP).
11 8400 – For flat material up to 4 mm thickness, and pipes of up to 4 mm wall thickness.
11 8500 – Only for flat material up to 5 mm thickness.
11 8505 – Only for flat material up to 5 mm thickness.

11 8400



11 8500

11 8505



Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	Graphite GRP CRP	Uni
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	N	
11 8400–11 8505		70		50	50									35			80	●

∅ mm	11C 11 8400 Garant Carbide hole saw high	11C 11 8500 Garant Carbide hole saw flat	12C 11 8505 HOLEX Carbide hole saw flat	Shank ∅ 11 8400 11 8500 mm	Shank ∅ 11 8505 mm
16	XXX	XXX	XXX	6	10
17	XXX	XXX	XXX	6	10
18	XXX	XXX	XXX	6	10
19	XXX	XXX	XXX	6	10
20	XXX	XXX	XXX	6	10
21	XXX	XXX	XXX	6	10
22	XXX	XXX	XXX	6	10
23	XXX	XXX	XXX	10	10
24	XXX	XXX	XXX	10	10
25	XXX	XXX	XXX	10	10
26	XXX	XXX	XXX	10	10
27	XXX	XXX	XXX	10	10
28	XXX	XXX	XXX	10	10
29	XXX	XXX	XXX	10	10
30	XXX	XXX	XXX	10	10
31	XXX	XXX	XXX	10	10
32	XXX	XXX	XXX	10	10
33	XXX	XXX	XXX	10	10
34	XXX	XXX	XXX	10	10
35	XXX	XXX	XXX	10	10
36	XXX	XXX	XXX	10	10
37	XXX	XXX	XXX	10	10
38	XXX	XXX	XXX	10	10
39	XXX	XXX	XXX	10	10
40	XXX	XXX	XXX	10	10
41	XXX	XXX	XXX	10	10
42	XXX	XXX	XXX	10	10
43	XXX	XXX	XXX	10	10

∅ mm	11C 11 8400 Garant Carbide hole saw high	11C 11 8500 Garant Carbide hole saw flat	12C 11 8505 HOLEX Carbide hole saw flat	Shank ∅ 11 8400 11 8500 mm	Shank ∅ 11 8505 mm
44	XXX	XXX	XXX	10	10
45	XXX	XXX	XXX	10	10
46	XXX	XXX	XXX	10	10
47	–	XXX	–	10	–
48	XXX	XXX	XXX	10	10
49	XXX	XXX	XXX	10	10
50	XXX	XXX	XXX	10	10
51	–	XXX	–	10	–
52	XXX	XXX	XXX	10	10
53	–	XXX	–	10	–
54	–	XXX	–	10	–
55	XXX	XXX	XXX	10	10
56	–	XXX	–	10	–
58	–	XXX	–	10	–
60	XXX	XXX	XXX	13	10
65	XXX	XXX	–	13	–
68	–	XXX	–	13	–
70	XXX	XXX	XXX	13	13
75	–	XXX	–	13	–
80	XXX	XXX	–	13	–
85	–	XXX	–	13	–
90	XXX	XXX	–	13	–
95	–	XXX	–	13	–
100	XXX	XXX	–	13	–
105	–	XXX	–	13	–
110	–	XXX	–	13	–
115	–	XXX	–	13	–
120	–	XXX	–	13	–

Spare centre drill

HSS E

∅×overall length			mm	6×69	8×69	8×94	6×48	8×48
11C 11 8450	Garant	Spare centre drill for hole saw No. 118400		XXX	XXX	XXX	–	–
11C 11 8550	Garant	Spare centre drill for hole saw No. 118500		–	–	–	XXX	XXX
12C 11 8555	HOLEX	Spare centre drill for hole saw No. 118505		–	–	–	XXX	–
for hole saw ∅ (11 8450, 11 8550)			mm	16 – 22	23 – 55	60 – 100	16 – 58	60 – 120
for hole saw ∅ (11 8555)			mm	–	–	–	16 – 70	–

11 8450

11 8550

11 8555

Core drill for magnetic core drilling machines 30 and 55 mm cutting depth

Standard

Suitable for all popular magnetic core drilling machines. Very good cutting properties due to optimised cutting edge geometry. Easy to regrind. With Weldon shank - ∅ **19 mm.**

11 8780 – **Carbide with special TiAlN coating** – long tool life and outstanding cutting performance.

11 8790 – **HSS uncoated** – attractively priced alternative.

11 8800/8820 – **HSS with special TiAlN coating** for improved cutting characteristics (prevents edge build-up).

Application: On mobile magnetic drilling machines or stationary pillar drilling machines to produce large holes in steel construction. The core drill cuts only a thin material ring. The drilled core is ejected by a spring loaded ejector pin.

Supplied with: **Without** ejector pin.

Note:
- Larger sizes, intermediate sizes, and HSS core drills with 110 mm cutting depth available on request.
- For the lubrication of core drills, we recommend high performance cutting oil (see No. 084210).

Core drilling machines see No. 076520 – 076536 (Volume II / section 0).

Carbide

11 8780

HSS

11 8790

HSS

11 8800

HSS

11 8820

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	GG	GGG	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	K	K						
11 8780		80	75	50	45	35	20							25	20	20	15	●	●	●	○	●	
11 8790	60	60		15	10									10				●	●	●	○	○	
11 8800/8820	70	70		25	20									15		16	19	●	●	●	○	●	

∅ mm	11F 11 8780 Garant Carbide core drill Depth of cut 30 mm TiAlN	12D 11 8790 HOLEX HSS core drill Depth of cut 30 mm	12D 11 8800 HOLEX HSS core drill Depth of cut 30 mm TiAlN	12D 11 8820 HOLEX HSS core drill Depth of cut 55 mm TiAlN
12	–	XXX	XXX	XXX
13	–	XXX	XXX	XXX
14	XXX	XXX	XXX	XXX
15	XXX	XXX	XXX	XXX
16	XXX	XXX	XXX	XXX
17	XXX	XXX	XXX	XXX
17,5	–	–	XXX	–
18	XXX	XXX	XXX	XXX
19	XXX	XXX	XXX	–
20	XXX	XXX	XXX	XXX
21	XXX	XXX	XXX	XXX
22	XXX	XXX	XXX	XXX
23	XXX	XXX	XXX	–
24	XXX	XXX	XXX	XXX

∅ mm	11F 11 8780 Garant Carbide core drill Depth of cut 30 mm TiAlN	12D 11 8790 HOLEX HSS core drill Depth of cut 30 mm	12D 11 8800 HOLEX HSS core drill Depth of cut 30 mm TiAlN	12D 11 8820 HOLEX HSS core drill Depth of cut 55 mm TiAlN
25	XXX	XXX	XXX	XXX
26	XXX	XXX	XXX	XXX
26,5	–	–	–	XXX
27	–	–	XXX	XXX
28	–	XXX	XXX	XXX
30	–	XXX	XXX	XXX
32	–	XXX	XXX	XXX
35	–	XXX	XXX	XXX
36	–	–	(XXX)	–
38	–	–	(XXX)	–
40	–	XXX	XXX	XXX
45	–	XXX	XXX	–
50	–	XXX	XXX	XXX

Core drills set

Supplied with: 1 ejector pin, box.

11 8824 – Set with **1 each carbide core drill No. 118780** size 14 / 16 / 18 / 20 / 22 / 26 mm.

11 8825 – Set with **1 each HSS core drill No. 118800** size 14 / 16 / 18 / 20 / 22 / 26 mm.

11F 11 8824	Garant	Carbide core drill set	TiAlN	XXX
12D 11 8825	HOLEX	HSS core drill set	TiAlN	XXX

11 8824

Ejector pin

∅×Length	mm	6×79	6×99
12D 11 8889 HOLEX Ejector pin		XXX	XXX
fits core drill No.		118780; 118790; 118800	118820
suitable for core drill ∅	mm	12 – 60	12 – 60

11 8889

MT arbors, adapters

Suitable for: Core drills with Weldon shank ∅ 19 mm.

Application: For mounting core drills in stationary drilling machines.

Type		2/19	3/19
12D 11 8920 HOLEX MT arbor		XXX	XXX
MT		2	3
Shank ∅	mm	19	
suitable for core drill ∅	mm	12 – 60	
Cooling lubrication		manual	

11 8920

Adapter **with Weldon shank 19 mm ∅** for BDS core drilling machines. Required when using FEIN carbide core drills No. 119000.

03G 11 8925		Adapter for core drills (QuickIN)	XXX

11 8925

Carbide core drill for FEIN core drill units

Quick-change system saves time with key-less tool change.
Suitable for FEIN core drill units, with adaptor also for other makes. The core drill cuts only a ring of material, saving approx. 40 % – 60 % cutting time.

11 9000 – **High performance carbide** core drill with QuickIN arbor.
Overall length: 77 mm for all cutter sizes.
11 9010 – **HSS** core drill with QuickIN arbor.
Overall length: 72 mm for all cutter sizes.

Supplied with: **Without** centring pin.

Note: For FEIN core drill units see No. 076520/ 076524/ 076526 in section 0 – workshop accessories.
The centring pin No. 119019 is required when using the core drills 119010 and 119000.

Carbide

11 9000_20

HSS

11 9010_20

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	GG(G)	CuZn	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	K	N						
11 9000			○	●	●	●	●							●	●	●	●	●	●	●	○	●	
11 9010	○	●	○	●	●	○								○		○			●	●			

Ø mm	11 9000 Carbide core drill Depth of cut 35 mm	11 9010 HSS core drill Depth of cut 25 mm
12	XXX	XXX
13	XXX	XXX
14	XXX	XXX
15	XXX	XXX
16	XXX	XXX
17	XXX	XXX
18	XXX	XXX
19	–	XXX
20	XXX	XXX
21	XXX	XXX

Ø mm	11 9000 Carbide core drill Depth of cut 35 mm	11 9010 HSS core drill Depth of cut 25 mm
22	XXX	XXX
23	–	XXX
24	XXX	XXX
25	XXX	XXX
26	XXX	XXX
28	XXX	XXX
30	XXX	XXX
32	XXX	XXX
35	XXX	–
36	XXX	–

Ø mm	11 9000 Carbide core drill Depth of cut 35 mm	11 9010 HSS core drill Depth of cut 25 mm
38	XXX	–
40	XXX	–
43	XXX	–
45	XXX	–
50	XXX	–
52	XXX	–
55	XXX	–
60	XXX	–
62	XXX	–
65	XXX	–

Carbide core drill set

Carbide

Supplied with: 6 QuickIN core drills No. 119000 size 12 / 14 / 16 / 18 / 20 / 22 mm and 2 centring pins in plastic carrying case.

11 9022

11 9022	Carbide core drill set	XXX

QuickIN arbor

Application:

11 9019 – Spare centring pin for QuickIN core drills 119010.
11 9037 – Spare centring pin for QuickIN core drills 119000.
11 9030/9035 – **QuickIN arbor** for table and pillar drilling machines. Including hand pump and centring pin for external coolant feed.
For all FEIN core drills Ø 12 - 65 mm.

11 9030

11 9030	QuickIN arbor MT2	XXX
11 9035	QuickIN arbor MT3	XXX

Length mm		80	100
11 9019	Centring pin for 119010	XXX	–
11 9037	Centring pin for 119000	–	XXX

11 9019 / 11 9037

Adapter

Application:

11 9040 – Adapter **with QuickIN shank** for FEIN core drill units.
Accepts carbide and HSS core drills No. 118780 – 118820 (with Weldon shank 19 mm).
11 9042 – Spare centring pin for core drills when using adapter No. 119040.

11 9040

11 9042

11 9040	Adapter for HSS core drill (Weldon)	XXX
11 9042	Centring pin	XXX

Garant HOLEX Overview – Solid carbide jobber drill range

Colour ring																			
Brand		Garant		Garant		Garant		HOLEX		Garant		Garant		Garant		Garant		Garant	
Coating		DLC				TiAlN		TiAlN		TiAlN		TiAlN		TiAlN		TiAlN		Diamond	
		No.	Page	No.	Page	No.	Page	No.	Page	No.	Page	No.	Page	No.	Page	No.	Page	No.	Page
3×D																			
4×D without IC				12 1230	67	12 2361	71	12 2394	73										
4×D		12 2306	70			12 2371	71	12 2404	74	12 2380	72	12 2430	75						
5×D without IC				12 1201	66													12 2512-22	85
5×D																		12 2532	85
6×D without IC						12 2641	89												
6×D		12 2602	87			12 2651	89	12 2664	92	12 2659	90			12 2670	93	12 2690	94		
6×D pilot drill		12 2606	88																
8×D		12 2808	105							12 3008	106								
10×D										12 3110	111								
12×D		12 3178	112							12 3212	113								
16×D		12 3588	120																
20×D		12 3590	120																
20×D co-pilot drill																			
25×D		12 3593	120																
30×D		12 3595	120																
40×D																			
50×D																			
Aluminium, plastics	N	●		●				○		○				●				●	
Steel < 500 N/mm²	P					○		●		●				●					
Steel < 900 N/mm²	P					●		●		●				●					
Steel < 1400 N/mm²	P					●		○		○				○					
Steel > 45 HRC	H					●													
INOX	M							●		●				●					
Ti	S							○		○		●		●					
GG (G)	K					●		○		○						●			
CuZn	N	●						○											
Graphite, GRP, CRP	N	●																●	
UNI						●		●		●				○					

		Centre drill				NC spotting drill 90°						NC spotting drill 142°						NC spotting drill 155°	
Brand		Garant		Garant		Garant		Garant		Garant		Garant		Garant		Garant		Garant	
Coating				TiAlN						TiAlN						TiAlN		TiAlN	
		No.	Page	No.	Page	No.	Page	No.	Page	No.	Page	No.	Page	No.	Page	No.	Page	No.	Page
Drills to DIN / manufacturer's standard		12 1000	62	12 1001	62	12 1019	62	12 1020	62	12 1040 12 1051	62	12 1068	63	12 1070	63	12 1110 12 1121	63	12 1130	65
Aluminium, plastics	N	●				○		○		●		○		○		●		●	
Steel < 500 N/mm²	P	●		●		●		●		●		●		●		●		●	
Steel < 900 N/mm²	P	●		●						●						●		●	
Steel < 1400 N/mm²	P	●		●						○						○		●	
Steel > 45 HRC	H			●														●	
INOX	M	●		●						●						●		●	
Ti	S	●								●						●		○	
GG (G)	K	●		●						●						●		●	
CuZn	N	●								●						●			
Graphite, GRP, CRP	N																		
UNI		●								●						●		●	

● = highly suitable; ○ = suitable only under restricted conditions

Colour ring																					
		HOLEX Pro Steel				Garant MasterSteel SPEED		Garant MasterSteel FEED				new Garant MasterSteel DCSP		180° point angle		Type FS		Fit H7		Hole reamer H7	
Brand		HOLEX		HOLEX		Garant		Garant		Garant		Garant		Garant		Garant		Garant		Garant	
Coating		TiAlN		TiN		TiAlN		TiAlN		TiAlN		TiAlN		TiAlN		TiAlN		TiAlN		TiAlN	
		No.	Page	No.	Page	No.	Page	No.	Page	No.	Page			No.	Page	No.	Page	No.	Page	No.	Page
3×D														12 2506	84						
4×D without IC		12 2501	80	12 2310	80	12 2415	76			12 2440	79										
4×D		12 2504	82	12 2340	82	12 2425	77	12 2435	78	12 2500	79										
5×D without IC																					
5×D														12 2793	103					12 2795	104
6×D without IC		12 2771	99													12 2540	86				
6×D		12 2776	100	12 2630	100	12 2715	95	12 2725	96	12 2760	98							12 2790	102		
6×D pilot drill										12 2736	97	12 3885	124								
8×D		12 3103	110	12 3106	110	12 3025	107	12 3035	108	12 3101	109										
10×D																					
12×D		12 3303	117	12 3306	117	12 3225	114	12 3235	115	12 3301	116										
16×D										12 3688	121	12 3888	124								
20×D										12 3690	121	12 3890	124								
20×D co-pilot drill										12 3691	122										
25×D										12 3693	121	12 3893	125								
30×D										12 3695	121	12 3895	125								
40×D										12 3740	122										
50×D										12 3750	122										
Aluminium, plastics	N	○		○						○						●				○	
Steel < 500 N/mm²	P	●		●		●		●		○		●		●		●		●		●	
Steel < 900 N/mm²	P	●		●		●		●		●		●		●		●		●		●	
Steel < 1400 N/mm²	P	●		○		●		●		●		●		○		●		○		○	
Steel > 45 HRC	H							●		○		○									
INOX	M	○		○		○		●		○		○		●		○		○			
Ti	S			○				○		○		○				○					
GG (G)	K	●		○		●		●		●		●		●		○				●	
CuZn	N															○					
Graphite, GRP, CRP	N																				
UNI		●		●		●		●		●		●		●		●		●			

		Drill, through shank						Carbide drill		Micro-drill		Stepped drill							
												Garant MasterSteel FEED Tapping hole drill		90° counterbore		90° counterbore		180° counterbore	
Brand		Garant		Garant		HOLEX		Garant		Garant		Garant		Garant		Garant		Garant	
Coating				TiAlN		TiN				TiAlN		TiAlN		TiAlN		TiAlN		TiAlN	
		No.	Page	No.	Page	No.	Page	No.	Page	No.	Page	No.	Page	No.	Page	No.	Page	No.	Page
Drills to DIN / manufacturer's standard		12 2100 122250	68/69	12 2151 122251	68/69	12 2160 12 2301	68/69	12 1150	66	12 1220	67	12 5035*	126	12 5050	127	12 5100	128	12 5120	128
Aluminium, plastics	N	○		●		●		○		●				●		●		●	
Steel < 500 N/mm²	P	●		●		●		●		●		●		●		●		●	
Steel < 900 N/mm²	P	●		●		●		●		●		●		●		●		●	
Steel < 1400 N/mm²	P	●		●		●		●		●		●		●		●		●	
Steel > 45 HRC	H									○		●							
INOX	M	○		●		○				●		●		●		●		●	
Ti	S	●		●		●				●		○		●		●		●	
GG (G)	K			●		●		●		●		●		○		●		○	
CuZn	N	●		●		●		●		●				●		●		●	
Graphite, GRP, CRP	N			●															
UNI				●		●				●		●		●		●		●	

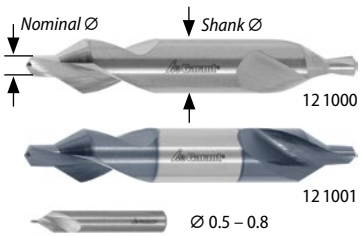
*configurable with 12 5040 – 12 5044

● = highly suitable; ○ = suitable only under restricted conditions

Solid carbide | DIN 333 | Type A | k13 | 60° | h6

Garant Solid carbide centre drill

12 1001 – Ground from solid carbide bar. Spiral fluted.
For materials up to **62 HRC.**
Size 0,5; 0,8 – Single-ended!



Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	CuZn	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	M	M	S	K	N						
12 1000	200	180	160	80	75	65	50	35					35	30	25	70	160	●	●	●		○	
12 1001							60	40	20	15		10							●	●		○	

Ø k13	11E 12 1000	11E 12 1001	for workpiece Ø		L_{tot}	< 1100 N f
	Solid carbide centre drills					
	A					
mm		TiAlN	mm	mm	mm	mm/rev.
0,5	XXX	XXX	< 4	3.15	20	0.01
0,8	XXX	XXX	4 – 6	3.15	20	0.01
1	XXX	XXX	6 – 8	3.15	31.5	0.02
1,25	XXX	XXX	8 – 10	3.15	31.5	0.02
1,6	XXX	XXX	10 – 15	4	35.5	0.06
2	XXX	XXX	15 – 20	5	40	0.06
2,5	XXX	XXX	20 – 30	6.3	45	0.08
3,15	XXX	XXX	30 – 40	8	50	0.08
4	XXX	XXX	40 – 63	10	56	0.1
5	XXX	XXX	63 – 100	12.5	63	0.1
6,3	XXX	XXX	100 – 150	16	71	0.15

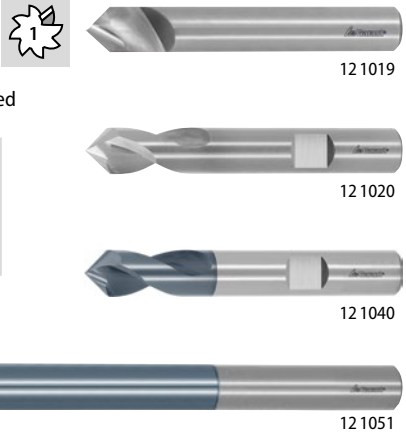
Solid carbide | Standard | h6 | 90° | h6 DIN 6535 HA | h6 DIN 6535 HB

Garant Solid carbide NC spotting drill

12 1019 – **Self-centring** with **1-cutter geometry**, achieves **very high alignment accuracy.**
12 1051 – **Extra long version.**
12 1020–1051 – Exactly **central ground point. Easy spot drilling** and **high shape accuracy** of the centre hole. Sturdy due to short flutes.
12 1020/1040 – **≥ Ø 6 mm with HB drive flat.**

Application: Point angle **90°** for spot drilling and countersinking in one operation when a drill of smaller Ø is used afterwards.

Note: Use the speed for the actual hole Ø (not generally the speed for the drill outer Ø).
12 1019 – **Maintain a feed rate f** = 0.015 mm/rev**!**
12 1051 – HB and HE shanks are available at the same price as HA. (from Ø 6 mm)
form **HB:** order with **No. 121050**.
Form **HE:** order with **No. 121051 + 129100 HE.**



Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	CuZn	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	M	M	S	K	N						
12 1019/1020	200	180		80															●	●		○	
12 1040/1051	260	240	200	90	80	65	55						35	30	40	90	200	●	●	●		○	

Ø h6	11E 12 1019	11E 12 1020	11E 12 1040	11E 12 1051			L_{tot}		< 1100 N f	
	Solid carbide NC precision spotting drill	Solid carbide NC spotting drill								
	90°	90° spiral flutes	90° spiral flutes	90° extra long spiral flutes	12 1019	12 1020 12 1040 12 1051	12 1019 12 1020 12 1040	12 1051		12 1019	12 1020 12 1040 12 1051
			TiAlN	TiAlN							
mm					mm	mm	mm	mm	mm	mm/rev.	mm/rev.
1	XXX	–	–	–	4	–	25	–	1	0.015	–
2	XXX	XXX	XXX	XXX	5	6	32	75	2	0.015	0.03
3	XXX	XXX	XXX	XXX	6	8	32	80	3	0.015	0.03
4	XXX	XXX	XXX	XXX	8	10	40	100	4	0.015	0.03
5	XXX	XXX	XXX	XXX	8	13	50	120	5	0.015	0.03
6	XXX	XXX	XXX	XXX	8	13	50	140	6	0.015	0.03
8	XXX	XXX	XXX	XXX	10	23	60	140	8	0.015	0.03
10	XXX	XXX	XXX	XXX	10	24	70	170	10	0.015	0.03
12	XXX	XXX	XXX	XXX	12	24	70	170	12	0.015	0.03
16	XXX	XXX	XXX	XXX	16	29	75	200	16	0.015	0.03
20	XXX	XXX	XXX	XXX	20	35	100	200	20	0.015	0.03

Solid carbide | Standard | h6 | 142°

h6 DIN 6535 HA | h6 DIN 6535 HB

Garant

Solid carbide NC spotting drill

12 1068 – **Self-centring** with **1-cutter geometry**, achieves **very high alignment accuracy.**

12 1121 – **Extra long version.**

12 1070–1121 – Exactly **central ground point. Easy spot drilling** and **high shape accuracy** of the centre hole. Sturdy due to short flutes.

12 1070/1110 – **≥ Ø 6 mm with HB drive flat.**

Application: Point angle **142°** so that the cutting edges of the following twist drill engage easily.

Note: Use speed for the actual hole Ø (not generally the speed for the drill outer Ø).

12 1068 – **Maintain a feed rate f** = 0.015 mm/rev**!**

12 1121 – Form HB and HE supplied at the same price as HA.
Form **HB:** order with **No. 121120**.
Form **HE:** order with **No. 121121 + 129100 HE**.

12 1068

12 1070

12 1110

12 1121

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	CuZn	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	M	M	S	K	N						
12 1068/1070	200	180		80															●	●		○	
12 1110/1121	260	240	200	90	80	65	55						35	30	40	90	200	●	●	●		○	

Ø h6	12 1068	12 1070	12 1110	12 1121							
	Solid carbide NC precision spotting drill	Solid carbide NC spotting drill									
	142°	142° spiral flutes	142° spiral flutes	142° extra long spiral flutes	12 1068	12 1070 12 1110 12 1121	12 1068 12 1070 12 1110	12 1121		12 1068	12 1070 12 1110 12 1121
			TiAlN	TiAlN							
mm					mm	mm	mm	mm	mm	mm/rev.	mm/rev.
1	XXX	–	–	–	4	–	25	–	1	0.015	–
2	XXX	XXX	XXX	XXX	5	6	32	75	2	0.015	0.03
3	XXX	XXX	XXX	XXX	6	8	32	80	3	0.015	0.03
4	XXX	XXX	XXX	XXX	8	10	40	100	4	0.015	0.03
5	XXX	XXX	XXX	XXX	8	13	50	120	5	0.015	0.03
6	XXX	XXX	XXX	XXX	8	13	50	140	6	0.015	0.03
8	XXX	XXX	XXX	XXX	10	23	60	140	8	0.015	0.03
10	XXX	XXX	XXX	XXX	10	24	70	170	10	0.015	0.03
12	XXX	XXX	XXX	XXX	12	24	70	170	12	0.015	0.03
16	XXX	XXX	XXX	XXX	16	29	75	200	16	0.015	0.03
20	XXX	XXX	XXX	XXX	20	35	100	200	20	0.015	0.03

GARANT Master Steel FEED NC SPOTTING DRILL 155°

The point geometry of the Master Steel FEED NC spotting drill is optimally matched to the point geometry of the following Master Steel FEED drill 4×D - 12×D.

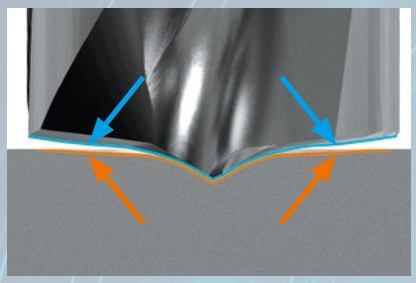
4×D 12 2435 (page 78)

6×D 12 2725 (page 96)

8×D 12 3035 (page 108)

12×D 12 3235 (page 115)

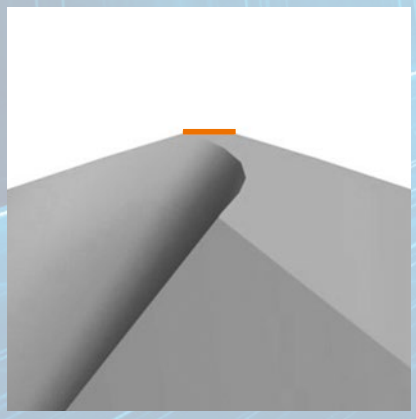
GARANT Master Steel FEED drill



Shape of the spot drilling performed by a GARANT Master Steel FEED NC spotting drill

Precisely accurate: The drill tip centre of the GARANT Master Steel Feed NC spotting drill

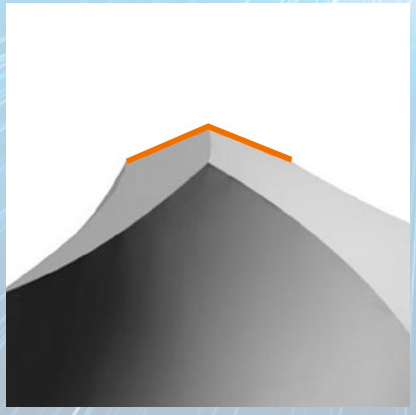
2 Standard NC spotting drill with 2 cutting edges



Linear chisel point

The first contact between the tool and material is a line. This allows the tool to wander and fail to penetrate precisely, which has a negative effect on the alignment accuracy.

3 GARANT Master Steel FEED with 3 cutting edges



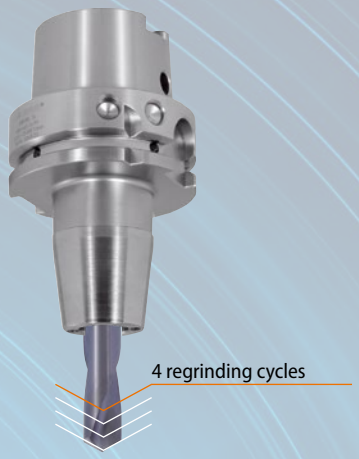
Tetrahedral drill point

The first contact occurs at the point which thereby defines an exact position. As the drill penetrates further into the material, the process forces act on the edges of the tetrahedral drill point, thus promoting the centring of the NC spotting drill.

More regrinding cycles – more cost-effective

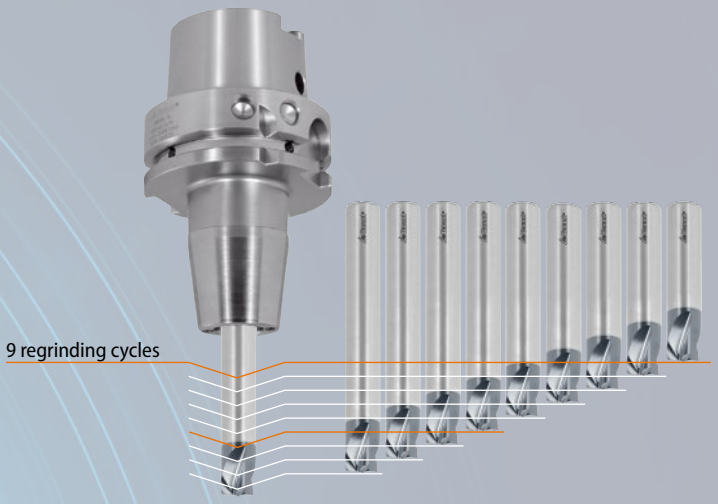
GARANT TOOLGRINDING
Original regrinding for the best tool life and tool performance.

2 The standard: Conventional NC spotting drill



Only the main cutting edges are reground.
A maximum of **4 regrinding cycles** can be achieved.

3 The innovation: Garant Master Steel FEED



The **complete point geometry is reground.** The longer design of the FEED spotting drill permits up to **9 regrinding cycles.** **The regrinding costs** are no higher than for the two-flute NC spotting drill!

Solid carbide | Standard | h6 | 155° | h6 DIN 6535 HA HB HE | 3

Garant GARANT Master Steel FEED solid carbide NC spotting drill

3-flute NC spotting drill with high positioning accuracy and special point angle 155° for the GARANT Master Steel FEED drill. The **sector-leading technology of the drill point** guarantees **optimum self-centring behaviour** and permits spot drilling on irregular surfaces.

Note:	Form HB and HE supplied at the same price as HA. Form **HB:** order with **No. 121130 + 129100 HB.** Form **HE:** order with **No. 121130 + 129100 HE**.

Plain shank DIN 6535HA 12 1130

Weldon shank DIN 6535HB 12 1130 + 12 9100HB

Whistle-Notch shank DIN 6535HE 12 1130 + 12 9100HE

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG	GGG	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	M	M	S	K	K						
12 1130	260	220	200	120	110	100	90	70	60				55	50	40	120	80	●	●	●	●	○	

Ø h6	11E **12 1130** GARANT Master Steel FEED solid carbide NC spotting drill, plain shank **155°** **DIN 6535 HA**		L_{tot}		Depth of spot facing	< 1100 N f
mm	**TiAlN**	mm	mm	mm	mm	mm/rev.
4	XXX	6	55	4	0.24 – 0.4	0.12
5	XXX	7	62	6	0.3 – 0.5	0.12
6	XXX	9	66	6	0.36 – 0.6	0.15
8	XXX	11	79	8	0.48 – 0.8	0.18
10	XXX	14	89	10	0.6 – 1	0.2
12	XXX	17	102	12	0.72 – 1.2	0.22
16	XXX	23	115	16	0.96 – 1.6	0.25
20	XXX	28	131	20	1.2 – 2	0.3

Carbide K20 | DIN 8037 | h8 | 2 | 118°

Carbide tipped jobber drill plain shank

With carbide cutting tip. Ground between centres.
Shank with driver tang for use in clamping collets.

Recommendation: Maximum drilling depth:
Flute length (see table) less 1.5×nominal Ø.

12 1150

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	CuZn
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	K	N
12 1150			140	70	70	60	40	25									90	140

Ø h8 mm	11E 12 1150 Carbide tipped jobber drill	L_{tot} mm	< 1100 N f mm/rev.
3	XXX	50	0.07
3,2	XXX	56	0.07
3,5	XXX	56	0.07
4	XXX	56	0.07
4,2	XXX	63	0.07
4,5	XXX	63	0.07
5	XXX	63	0.07
5,5	XXX	71	0.07

Ø h8 mm	11E 12 1150 Carbide tipped jobber drill	L_{tot} mm	< 1100 N f mm/rev.
6	XXX	71	0.1
6,5	XXX	71	0.1
7	XXX	80	0.1
7,5	XXX	80	0.1
8	XXX	80	0.1
8,5	XXX	90	0.1
9	XXX	90	0.13
9,5	XXX	90	0.13

Ø h8 mm	11E 12 1150 Carbide tipped jobber drill	L_{tot} mm	< 1100 N f mm/rev.
10	XXX	100	0.13
10,5	XXX	100	0.13
11	XXX	100	0.13
12	XXX	112	0.17
13	XXX	112	0.17
14	XXX	125	0.17
15	XXX	125	0.17
16	XXX	140	0.19

Solid carbide | 5×D | ±0.003 | 1 | 120° | h6 DIN 6535 HA

Solid carbide special drill for plastics

Spiral flute precision drill for plastics. **Self-centring** with **1-cutter geometry**, achieves **very high alignment accuracy. Polished** helical flutes for **optimum chip evacuation.**
Maintains the **tolerance band IT7** from entry Ø through to exit Ø, **due to special point geometry**.

Recommendation: Maximum drilling depth:
flute length (see table) less 1.5×nominal Ø.

Note:
Form HB and HE supplied at the same price as HA.
Form **HB:** order with **No.121201 + 129100HB**.
Form **HE:** order with **No.121201 + 129100HE**.

12 1201

Weldon shank DIN 6535HB 12 1201 + 12 9100HB

Whistle-Notch shank DIN 6535HE 12 1201 + 12 9100HE

Suitable for/ v_c [m/min]	PMMA acrylic	PE-HD	PA 66	PEEK	PF 31	AFRP aramid	PVDF GF20	POM GF25	PA 66 GF30	PEEK GF30	PTFE CF25	PEEK CF30	Hybrid	Honey-comb sandwich	Inconel®	MMC	GRP	CRP
ISO code	N	N	N	N	N	N	N	N	N	N	N	N	N	N	S	N	N	N
12 1201	30	50	50	50	50		60	60	60	50	40	40						

Ø ±0.003 mm	11E 12 1201 Solid carbide special drill DIN 6535 HA	L_{tot} mm	mm	PEEK f mm/rev.
0,97	XXX	45	3	0.1
0,98	XXX	45	3	0.1
0,99	XXX	45	3	0.1
1	XXX	45	3	0.1
1,01	XXX	45	3	0.1
1,02	XXX	45	3	0.1
1,03	XXX	45	3	0.1
1,5	XXX	50	3	0.1
1,97	XXX	50	3	0.1
1,98	XXX	50	3	0.1
1,99	XXX	50	3	0.1
2	XXX	50	3	0.1
2,01	XXX	50	3	0.1
2,02	XXX	50	3	0.1
2,03	XXX	50	3	0.1
2,5	XXX	66	4	0.1
2,97	XXX	66	4	0.1
2,98	XXX	66	4	0.1
2,99	XXX	66	4	0.1
3	XXX	66	4	0.1
3,01	XXX	66	4	0.1
3,02	XXX	66	4	0.1
3,03	XXX	66	4	0.1
3,97	XXX	74	4	0.15
3,98	XXX	74	4	0.15
3,99	XXX	74	4	0.15
4	XXX	74	4	0.15

Ø ±0.003 mm	11E 12 1201 Solid carbide special drill DIN 6535 HA	L_{tot} mm	mm	PEEK f mm/rev.
4,01	XXX	74	4	0.15
4,02	XXX	74	4	0.15
4,03	XXX	74	4	0.15
4,2	XXX	82	6	0.15
4,97	XXX	82	6	0.15
4,98	XXX	82	6	0.15
4,99	XXX	82	6	0.15
5	XXX	82	6	0.15
5,01	XXX	82	6	0.15
5,02	XXX	82	6	0.15
5,03	XXX	82	6	0.15
5,97	XXX	82	6	0.15
5,98	XXX	82	6	0.15
5,99	XXX	82	6	0.15
6	XXX	82	6	0.15
6,01	XXX	82	6	0.15
6,02	XXX	82	6	0.15
6,03	XXX	82	6	0.15
6,8	XXX	91	8	0.2
6,97	XXX	91	8	0.2
6,98	XXX	91	8	0.2
6,99	XXX	91	8	0.2
7	XXX	91	8	0.2
7,01	XXX	91	8	0.2
7,02	XXX	91	8	0.2
7,03	XXX	91	8	0.2
7,97	XXX	91	8	0.2

Ø ±0.003 mm	11E 12 1201 Solid carbide special drill DIN 6535 HA	L_{tot} mm	mm	PEEK f mm/rev.
7,98	XXX	91	8	0.2
7,99	XXX	91	8	0.2
8	XXX	91	8	0.2
8,01	XXX	91	8	0.2
8,02	XXX	91	8	0.2
8,03	XXX	91	8	0.2
8,97	XXX	103	10	0.25
8,98	XXX	103	10	0.25
8,99	XXX	103	10	0.25
9	XXX	103	10	0.25
9,01	XXX	103	10	0.25
9,02	XXX	103	10	0.25
9,03	XXX	103	10	0.25
9,97	XXX	103	10	0.25
9,98	XXX	103	10	0.25
9,99	XXX	103	10	0.25
10	XXX	103	10	0.25
10,01	XXX	103	10	0.25
10,02	XXX	103	10	0.25
10,03	XXX	103	10	0.25
11,97	(XXX)	118	12	0.25
11,98	(XXX)	118	12	0.25
11,99	(XXX)	118	12	0.25
12	(XXX)	118	12	0.25
12,01	(XXX)	118	12	0.25
12,02	(XXX)	118	12	0.25
12,03	(XXX)	118	12	0.25

Solid carbide | Standard | Type N | 0 +0.004 | 2 | 130° | h6 | HPC

Garant® Solid carbide micro drill HPC with shank Ø 3 h6

High performance miniature drill **with extra long flutes.**
Shank Ø 3 h6 for shrink-fit chucks.
High concentricity, precision ground for **HPC applications in steel.**
Recommendation: Maximum drilling depth:
Flute length (see table) less 1.5×nominal Ø.

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	CuZn	Uni
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	M	M	S	K	N	
12 1220	200	140	140	70	70	70	55	35	25				35	30	20	90	140	●

Ø +0.004	11E 12 1220 Solid carbide HPC micro-drill		L_{tot}		< 1100 N f
mm	TiAlN	mm	mm	mm	mm/rev.
0,1	XXX	1.2	38	3	0.01
0,15	XXX	2	38	3	0.01
0,2	XXX	3.5	38	3	0.01
0,25	XXX	3.5	38	3	0.01
0,3	XXX	5.5	38	3	0.01
0,35	XXX	5.5	38	3	0.01
0,4	XXX	7	38	3	0.01
0,45	XXX	7	38	3	0.01
0,5	XXX	7	38	3	0.01
0,55	XXX	7	38	3	0.01
0,6	XXX	7	38	3	0.01
0,65	XXX	7	38	3	0.01
0,7	XXX	10.5	38	3	0.01
0,75	XXX	10.5	38	3	0.01
0,8	XXX	10.5	38	3	0.01
0,85	XXX	10.5	38	3	0.01
0,9	XXX	10.5	38	3	0.01
0,95	XXX	10.5	38	3	0.01
0,97	XXX	10.5	38	3	0.01
0,98	XXX	10.5	38	3	0.01
0,99	XXX	10.5	38	3	0.01
1	XXX	10.5	38	3	0.03
1,01	XXX	10.5	38	3	0.03
1,02	XXX	10.5	38	3	0.03
1,03	XXX	10.5	38	3	0.03

Ø +0.004	11E 12 1220 Solid carbide HPC micro-drill		L_{tot}		< 1100 N f
mm	TiAlN	mm	mm	mm	mm/rev.
1,05	XXX	10.5	38	3	0.03
1,1	XXX	10.5	38	3	0.03
1,15	XXX	10.5	38	3	0.03
1,2	XXX	10.5	38	3	0.03
1,25	XXX	10.5	38	3	0.03
1,3	XXX	10.5	38	3	0.03
1,35	XXX	10.5	38	3	0.03
1,4	XXX	10.5	38	3	0.03
1,45	XXX	10.5	38	3	0.03
1,47	XXX	10.5	38	3	0.03
1,48	XXX	10.5	38	3	0.03
1,49	XXX	10.5	38	3	0.03
1,5	XXX	10.5	38	3	0.03
1,51	XXX	10.5	38	3	0.03
1,52	XXX	10.5	38	3	0.03
1,53	XXX	10.5	38	3	0.03
1,55	XXX	10.5	38	3	0.03
1,6	XXX	10.5	38	3	0.03
1,65	XXX	10.5	38	3	0.03
1,7	XXX	10.5	38	3	0.03
1,75	XXX	10.5	38	3	0.03
1,8	XXX	10.5	38	3	0.03
1,85	XXX	12	38	3	0.03
1,9	XXX	12	38	3	0.03
1,95	XXX	12	38	3	0.03

Ø +0.004	11E 12 1220 Solid carbide HPC micro-drill		L_{tot}		< 1100 N f
mm	TiAlN	mm	mm	mm	mm/rev.
1,97	XXX	12	38	3	0.03
1,98	XXX	12	38	3	0.03
1,99	XXX	12	38	3	0.03
2	XXX	13	42	3	0.05
2,01	XXX	13	42	3	0.05
2,02	XXX	13	42	3	0.05
2,03	XXX	13	42	3	0.05
2,05	XXX	13	42	3	0.05
2,1	XXX	13	42	3	0.05
2,15	XXX	13	42	3	0.05
2,2	XXX	15	46	3	0.05
2,25	XXX	15	46	3	0.05
2,3	XXX	15	46	3	0.05
2,35	XXX	15	46	3	0.05
2,4	XXX	15	46	3	0.05
2,45	XXX	15	46	3	0.05
2,47	XXX	15	46	3	0.05
2,48	XXX	15	46	3	0.05
2,49	XXX	15	46	3	0.05
2,5	XXX	15	46	3	0.05
2,51	XXX	15	46	3	0.05
2,52	XXX	15	46	3	0.05
2,53	XXX	15	46	3	0.05

Solid carbide | Standard | 4×D | h6 | 2 | h6

Garant® Solid carbide drill for aramide

Special geometry for reliable drilling of aramide plastics (polyaramides) and aramide fibres as well as thermoplastics and thermosetting plastics.
Recommendation: Maximum drilling depth:
Flute length (see table) less 1.5×nominal Ø.

Suitable for/ v_c [m/min]	PMMA acrylic	PE-HD	PA 66	PEEK	PF 31	AFRP aramid	PVDF GF20	POM GF25	PA 66 GF30	PEEK GF30	PTFE CF25	PEEK CF30	Hybrid	Honey-comb sandwich	Inconel®	MMC	GRP	CRP
ISO code	N	N	N	N	N	N	N	N	N	N	N	N	N	N	S	N	N	N
12 1230		140	130	120	100	110								120				

Ø h6	11Y 12 1230 Solid carbide drill for aramide		L_{tot}		AFRP aramid f
mm		mm	mm	mm	mm/rev.
3	XXX	12	40	3	0.05
4	XXX	18	55	4	0.05
5	XXX	26	62	5	0.05
6	XXX	28	66	6	0.07
6,5	XXX	31	70	6.5	0.07
7	XXX	34	74	7	0.07

Ø h6	11Y 12 1230 Solid carbide drill for aramide		L_{tot}		AFRP aramid f
mm		mm	mm	mm	mm/rev.
8	XXX	37	79	8	0.09
8,5	XXX	37	79	8.5	0.09
9	XXX	40	84	9	0.09
10	XXX	48	89	10	0.1
12	XXX	50	102	12	0.1

Solid carbide	DIN 6539	Type N	h7	2	118°	30°	h7

Solid carbide jobber drill

Similar to DIN 6539 (stub).
Nominal Ø and shank Ø equal.

12 2151 – TiAlN coating for even better performance.
12 2160 – TiN coating.

Recommendation: Maximum drilling depth:
flute length (see table) less 1.5×nominal Ø.

Note: Non slip clamping in drill chuck No. 341050 with diamond coated clamping jaws.

12 2100

12 2151

12 2160

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	CuZn	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	M	M	S	K	N						
12 2100	200	140	140	70	70	60	40	25					20	20	15		140	●	●	●		○	
12 2151	260	180	180	90	90	80	60	35					35	25	25	90	180	●	●	●		○	
12 2160	230	160	160	80	80	70	50	30					30	25	20	85	160	●	●	●		○	

Ø h7	11E 12 2100 Garant	11E 12 2151 Garant	12E 12 2160 HOLEX	Solid carbide jobber drill extra stub			< 1100 N		
mm		TiAlN	TiN	mm	L_{tot} mm	f mm/rev.			
0,5	XXX	XXX	XXX	3	20	0.01			
0,6	XXX	XXX	XXX	3.5	21	0.01			
0,7	XXX	XXX	XXX	4.5	23	0.01			
0,8	XXX	XXX	XXX	5	24	0.01			
0,9	XXX	XXX	XXX	5.5	25	0.01			
1	XXX	XXX	XXX	6	26	0.03			
1,1	XXX	XXX	XXX	7	28	0.03			
1,2	XXX	XXX	XXX	8	30	0.03			
1,25	XXX	–	XXX	8	30	0.03			
1,3	XXX	XXX	XXX	8	30	0.03			
1,4	XXX	XXX	XXX	9	32	0.03			
1,45	XXX	–	XXX	9	32	0.03			
1,5	XXX	XXX	XXX	9	32	0.03			
1,55	XXX	–	XXX	9	32	0.03			
1,6	XXX	XXX	XXX	10	34	0.03			
1,7	XXX	XXX	XXX	10	34	0.03			
1,8	XXX	XXX	XXX	11	36	0.03			
1,9	XXX	XXX	XXX	11	36	0.03			
2	XXX	XXX	XXX	12	38	0.05			
2,05	XXX	–	XXX	12	38	0.05			
2,1	XXX	XXX	XXX	12	38	0.05			
2,2	XXX	XXX	XXX	13	40	0.05			
2,3	XXX	XXX	XXX	13	40	0.05			
2,4	XXX	XXX	XXX	14	43	0.05			
2,5	XXX	XXX	XXX	14	43	0.05			
2,6	XXX	XXX	XXX	14	43	0.05			
2,7	XXX	XXX	XXX	16	46	0.05			
2,8	XXX	XXX	XXX	16	46	0.05			
2,9	XXX	XXX	XXX	16	46	0.05			
3	XXX	XXX	XXX	16	46	0.08			
3,1	XXX	XXX	XXX	18	49	0.08			
3,2	XXX	XXX	XXX	18	49	0.08			
3,25	XXX	–	XXX	18	49	0.08			
3,3	XXX	XXX	XXX	18	49	0.08			
3,4	XXX	XXX	XXX	20	52	0.08			
3,5	XXX	XXX	XXX	20	52	0.08			
3,6	XXX	XXX	XXX	20	52	0.08			
3,7	XXX	XXX	XXX	20	52	0.08			
3,8	XXX	XXX	XXX	22	55	0.08			
3,9	XXX	XXX	XXX	22	55	0.08			
4	XXX	XXX	XXX	22	55	0.08			
4,1	XXX	XXX	XXX	22	55	0.08			
4,2	XXX	XXX	XXX	22	55	0.08			
4,3	XXX	XXX	XXX	24	58	0.08			
4,4	XXX	XXX	XXX	24	58	0.08			
4,5	XXX	XXX	XXX	24	58	0.08			
4,6	XXX	XXX	XXX	24	58	0.08			
4,7	XXX	XXX	XXX	24	58	0.08			
4,8	XXX	XXX	XXX	26	62	0.08			
4,9	XXX	XXX	XXX	26	62	0.08			
5	XXX	XXX	XXX	26	62	0.08			
5,1	XXX	XXX	XXX	26	62	0.08			
5,2	XXX	XXX	XXX	26	62	0.08			
5,3	XXX	XXX	XXX	26	62	0.08			

Ø h7	11E 12 2100 Garant	11E 12 2151 Garant	12E 12 2160 HOLEX	Solid carbide jobber drill extra stub			< 1100 N		
mm		TiAlN	TiN	mm	L_{tot} mm	f mm/rev.			
5,4	XXX	XXX	XXX	28	66	0.08			
5,5	XXX	XXX	XXX	28	66	0.08			
5,6	XXX	XXX	XXX	28	66	0.08			
5,7	XXX	XXX	XXX	28	66	0.08			
5,8	XXX	XXX	XXX	28	66	0.08			
5,9	XXX	XXX	XXX	28	66	0.08			
6	XXX	XXX	XXX	28	66	0.11			
6,1	XXX	XXX	XXX	31	70	0.11			
6,2	XXX	XXX	XXX	31	70	0.11			
6,3	XXX	XXX	XXX	31	70	0.11			
6,4	XXX	XXX	XXX	31	70	0.11			
6,5	XXX	XXX	XXX	31	70	0.11			
6,6	XXX	XXX	XXX	31	70	0.11			
6,7	XXX	–	XXX	31	70	0.11			
6,8	XXX	XXX	XXX	34	74	0.11			
6,9	XXX	XXX	XXX	34	74	0.11			
7	XXX	XXX	XXX	34	74	0.11			
7,1	XXX	–	XXX	34	74	0.11			
7,2	XXX	XXX	–	34	74	0.11			
7,3	XXX	XXX	–	34	74	0.11			
7,4	XXX	XXX	XXX	34	74	0.11			
7,5	XXX	XXX	XXX	34	74	0.11			
7,6	XXX	XXX	–	37	79	0.11			
7,7	XXX	XXX	–	37	79	0.11			
7,8	XXX	XXX	XXX	37	79	0.11			
7,9	XXX	XXX	–	37	79	0.11			
8	XXX	XXX	XXX	37	79	0.11			
8,1	XXX	XXX	XXX	37	79	0.11			
8,2	XXX	XXX	XXX	37	79	0.11			
8,3	XXX	XXX	–	37	79	0.11			
8,4	XXX	XXX	–	37	79	0.11			
8,5	XXX	XXX	XXX	37	79	0.11			
8,6	XXX	XXX	XXX	40	84	0.11			
8,7	XXX	XXX	–	40	84	0.11			
8,8	XXX	XXX	–	40	84	0.11			
8,9	XXX	XXX	–	40	84	0.11			
9	XXX	XXX	XXX	40	84	0.14			
9,1	XXX	XXX	–	40	84	0.14			
9,2	XXX	–	–	40	84	0.14			
9,3	XXX	–	XXX	40	84	0.14			
9,4	XXX	XXX	–	40	84	0.14			
9,5	XXX	XXX	XXX	40	84	0.14			
9,6	XXX	–	–	43	89	0.14			
9,7	XXX	–	XXX	43	89	0.14			
9,8	XXX	–	XXX	43	89	0.14			
9,9	XXX	–	–	43	89	0.14			
10	XXX	XXX	XXX	43	89	0.14			
10,2	XXX	XXX	XXX	43	89	0.14			
10,5	XXX	XXX	XXX	43	89	0.14			
11	XXX	XXX	XXX	47	95	0.14			
11,2	XXX	–	XXX	47	95	0.14			
11,5	XXX	–	XXX	47	95	0.14			
12	XXX	XXX	XXX	51	102	0.18			
13	XXX	XXX	XXX	51	102	0.18			

Solid carbide	DIN 338	Type N	h7	2	118°	30°	h7

Solid carbide jobber drill

Similar to DIN 338.
Nominal ∅ and shank ∅ equal.

12 2251 – TiAlN coating for even better performance.
12 2301 – TiN coating.

Recommendation: Maximum drilling depth:
Flute length (see table) less 1.5×nominal ∅.

Note: Non slip clamping in drill chuck No. 341050 with diamond coated jaws.

12 2250

12 2251

12 2301

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	CuZn	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	M	M	S	K	N						
12 2250	200	140	140	70	70	60	40	25					20	20	15		140	●	●	●		○	
12 2251	260	180	180	90	90	80	60	35					35	25	25	90	180	●	●	●		○	
12 2301	230	160	160	80	80	70	50	30					30	25	20	85	160	●	●	●		○	

∅ h7	11E 12 2250 Garant	11E 12 2251 Garant	12E 12 2301 HOLEX				∅ h7	11E 12 2250 Garant	11E 12 2251 Garant	12E 12 2301 HOLEX			
	Solid carbide jobber drill					< 1100 N		Solid carbide jobber drill					< 1100 N
mm		TiAlN	TiN	mm	L_{tot} mm	f mm/rev.	mm		TiAlN	TiN	mm	L_{tot} mm	f mm/rev.
1	XXX	XXX	XXX	12	34	0.03	5,6	XXX	XXX	XXX	57	93	0.08
1,1	XXX	XXX	XXX	14	36	0.03	5,7	XXX	XXX	XXX	57	93	0.08
1,2	XXX	XXX	XXX	16	38	0.03	5,8	XXX	XXX	XXX	57	93	0.08
1,3	XXX	XXX	XXX	16	38	0.03	5,9	XXX	XXX	XXX	57	93	0.08
1,4	XXX	XXX	XXX	18	40	0.03	6	XXX	XXX	XXX	57	93	0.11
1,5	XXX	XXX	XXX	18	40	0.03	6,1	XXX	XXX	XXX	63	101	0.11
1,6	XXX	XXX	XXX	20	43	0.03	6,2	XXX	XXX	XXX	63	101	0.11
1,7	XXX	XXX	XXX	20	43	0.03	6,3	XXX	XXX	XXX	63	101	0.11
1,8	XXX	XXX	XXX	22	46	0.03	6,4	XXX	–	XXX	63	101	0.11
1,9	XXX	XXX	XXX	22	46	0.03	6,5	XXX	XXX	XXX	63	101	0.11
2	XXX	XXX	XXX	24	49	0.05	6,6	XXX	XXX	XXX	63	101	0.11
2,1	XXX	XXX	XXX	24	49	0.05	6,7	XXX	XXX	XXX	63	101	0.11
2,2	XXX	XXX	XXX	27	53	0.05	6,8	XXX	XXX	XXX	69	109	0.11
2,3	XXX	XXX	XXX	27	53	0.05	6,9	XXX	XXX	XXX	69	109	0.11
2,4	XXX	XXX	XXX	30	57	0.05	7	XXX	XXX	XXX	69	109	0.11
2,5	XXX	XXX	XXX	30	57	0.05	7,1	XXX	–	XXX	69	109	0.11
2,6	XXX	XXX	XXX	30	57	0.05	7,2	XXX	XXX	–	69	109	0.11
2,7	XXX	XXX	XXX	33	61	0.05	7,3	XXX	–	–	69	109	0.11
2,8	XXX	XXX	XXX	33	61	0.05	7,4	XXX	XXX	XXX	69	109	0.11
2,9	XXX	XXX	XXX	33	61	0.05	7,5	XXX	XXX	XXX	69	109	0.11
3	XXX	XXX	XXX	33	61	0.08	7,6	XXX	–	–	75	117	0.11
3,1	XXX	XXX	XXX	36	65	0.08	7,7	XXX	XXX	–	75	117	0.11
3,2	XXX	XXX	XXX	36	65	0.08	7,8	XXX	XXX	XXX	75	117	0.11
3,3	XXX	XXX	XXX	36	65	0.08	7,9	XXX	–	XXX	75	117	0.11
3,4	XXX	XXX	XXX	39	70	0.08	8	XXX	XXX	XXX	75	117	0.11
3,5	XXX	XXX	XXX	39	70	0.08	8,1	XXX	XXX	–	75	117	0.11
3,6	XXX	XXX	XXX	39	70	0.08	8,2	XXX	XXX	–	75	117	0.11
3,7	XXX	XXX	XXX	39	70	0.08	8,3	XXX	–	XXX	75	117	0.11
3,8	XXX	XXX	XXX	43	75	0.08	8,4	XXX	–	–	75	117	0.11
3,9	XXX	XXX	XXX	43	75	0.08	8,5	XXX	XXX	XXX	75	117	0.11
4	XXX	XXX	XXX	43	75	0.08	8,6	XXX	–	XXX	81	125	0.11
4,1	XXX	XXX	XXX	43	75	0.08	8,7	XXX	XXX	–	81	125	0.11
4,2	XXX	XXX	XXX	43	75	0.08	8,8	XXX	–	XXX	81	125	0.11
4,3	XXX	XXX	XXX	47	80	0.08	9	XXX	XXX	XXX	81	125	0.14
4,4	XXX	XXX	XXX	47	80	0.08	9,4	XXX	–	XXX	81	125	0.14
4,5	XXX	XXX	XXX	47	80	0.08	9,5	XXX	–	XXX	81	125	0.14
4,6	XXX	XXX	XXX	47	80	0.08	9,7	XXX	XXX	–	87	133	0.14
4,7	XXX	XXX	XXX	47	80	0.08	9,8	XXX	XXX	XXX	87	133	0.14
4,8	XXX	XXX	XXX	52	86	0.08	10	XXX	XXX	XXX	87	133	0.14
4,9	XXX	XXX	XXX	52	86	0.08	10,2	XXX	XXX	XXX	87	133	0.14
5	XXX	XXX	XXX	52	86	0.08	10,5	XXX	XXX	XXX	87	133	0.14
5,1	XXX	XXX	XXX	52	86	0.08	11	XXX	XXX	XXX	94	142	0.14
5,2	XXX	XXX	XXX	52	86	0.08	11,5	XXX	–	–	94	142	0.14
5,3	XXX	XXX	XXX	52	86	0.08	12	XXX	XXX	XXX	101	151	0.18
5,4	XXX	XXX	XXX	57	93	0.08	13	XXX	XXX	XXX	101	151	0.18
5,5	XXX	XXX	XXX	57	93	0.08							

Solid carbide | DIN 6537 K | 4×D | Type W | h7 | 2 | 135° | h6 DIN 6535 HA | 25 bar | HPC

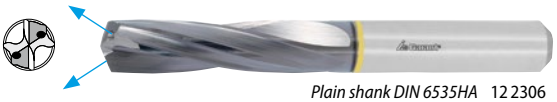
Garant

Solid carbide HPC drill

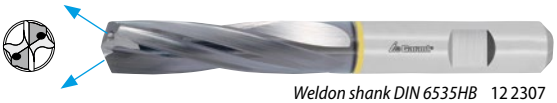
DLC coating sp² of the latest generation with **low coefficient of friction** results in **outstanding chip clearance.** For **high-performance milling** of **aluminium materials**. **High alignment accuracy** and **roundness of the hole,** thanks to **6 guide chamfers**. Size 1 - 1.5 with 4 guide chamfers.

Recommendation: Maximum drilling depth:
flute length (see table) less 1.5×nominal ∅.

Note:	Form HB and HE supplied at the same price as HA. Form **HB:** order with **No. 122307**. Form **HE:** order with **No. 122306 + 129100HE**.



Plain shank DIN 6535HA 12 2306



Weldon shank DIN 6535HB 12 2307

Whistle-Notch shank DIN 6535HE 12 2306 + 12 9100HE

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	PMMA acrylic	PE-HD	PA 66	PEEK	PF 31	AFRP aramid	PVDF GF20	POM GF25	PA 66 GF30	PEEK GF30	PTFE CF25	Cu	CuZn	GRP	CRP
ISO code	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
12 2306	360	400	350	150			120			90		80	70	80	160	200	80	80

∅ h7	12 2306	Solid carbide HPC drill, plain shank					
		DIN 6535 HA					
mm	DLC	mm	mm	mm	mm/rev.		
1	XXX	7	45	4	0.1		
1,1	XXX	7	45	4	0.15		
1,2	XXX	7	45	4	0.15		
1,3	XXX	7	45	4	0.15		
1,4	XXX	7	45	4	0.15		
1,5	XXX	14	55	4	0.15		
1,6	XXX	14	55	4	0.2		
1,7	XXX	14	55	4	0.2		
1,8	XXX	14	55	4	0.2		
1,9	XXX	14	55	4	0.2		
2	XXX	20	55	4	0.2		
2,1	XXX	20	55	4	0.22		
2,2	XXX	20	55	4	0.22		
2,3	XXX	20	55	4	0.22		
2,4	XXX	20	55	4	0.22		
2,5	XXX	20	55	4	0.22		
2,6	XXX	20	55	4	0.22		
2,7	XXX	20	55	4	0.22		
2,8	XXX	20	55	4	0.22		
2,9	XXX	20	55	4	0.22		
3	XXX	20	62	6	0.22		
3,1	XXX	20	62	6	0.35		
3,2	XXX	20	62	6	0.35		
3,3	XXX	20	62	6	0.35		
3,4	XXX	20	62	6	0.35		
3,5	XXX	20	62	6	0.35		
3,6	XXX	20	62	6	0.35		
3,7	XXX	20	62	6	0.35		
3,8	XXX	24	66	6	0.35		
3,9	XXX	24	66	6	0.35		
4	XXX	24	66	6	0.35		
4,1	XXX	24	66	6	0.35		
4,2	XXX	24	66	6	0.35		
4,3	XXX	24	66	6	0.35		
4,4	XXX	24	66	6	0.35		
4,5	XXX	24	66	6	0.35		
4,6	XXX	24	66	6	0.35		
4,65	XXX	24	66	6	0.35		
4,7	XXX	24	66	6	0.35		
4,8	XXX	28	66	6	0.35		
4,9	XXX	28	66	6	0.35		
5	XXX	28	66	6	0.35		

∅ h7	12 2306	Solid carbide HPC drill, plain shank					
		DIN 6535 HA					
mm	DLC	mm	mm	mm	mm/rev.		
5,1	XXX	28	66	6	0.45		
5,2	XXX	28	66	6	0.45		
5,3	XXX	28	66	6	0.45		
5,4	XXX	28	66	6	0.45		
5,5	XXX	28	66	6	0.45		
5,55	XXX	28	66	6	0.45		
5,6	XXX	28	66	6	0.45		
5,7	XXX	28	66	6	0.45		
5,8	XXX	28	66	6	0.45		
5,9	XXX	28	66	6	0.45		
6	XXX	28	66	6	0.45		
6,1	XXX	34	79	8	0.45		
6,2	XXX	34	79	8	0.45		
6,3	XXX	34	79	8	0.45		
6,4	XXX	34	79	8	0.45		
6,5	XXX	34	79	8	0.45		
6,6	XXX	34	79	8	0.45		
6,7	XXX	34	79	8	0.45		
6,8	XXX	34	79	8	0.45		
6,9	XXX	34	79	8	0.45		
7	XXX	34	79	8	0.45		
7,1	XXX	41	79	8	0.45		
7,2	XXX	41	79	8	0.45		
7,3	XXX	41	79	8	0.45		
7,4	XXX	41	79	8	0.45		
7,45	XXX	41	79	8	0.45		
7,5	XXX	41	79	8	0.45		
7,6	XXX	41	79	8	0.45		
7,7	XXX	41	79	8	0.45		
7,8	XXX	41	79	8	0.45		
7,9	XXX	41	79	8	0.45		
8	XXX	41	79	8	0.45		
8,1	XXX	47	89	10	0.55		
8,2	XXX	47	89	10	0.55		
8,3	XXX	47	89	10	0.55		
8,4	XXX	47	89	10	0.55		
8,5	XXX	47	89	10	0.55		
8,6	XXX	47	89	10	0.55		
8,7	XXX	47	89	10	0.55		
8,8	XXX	47	89	10	0.55		
8,9	XXX	47	89	10	0.55		
9	XXX	47	89	10	0.55		

∅ h7	12 2306	Solid carbide HPC drill, plain shank					
		DIN 6535 HA					
mm	DLC	mm	mm	mm	mm/rev.		
9,1	XXX	47	89	10	0.55		
9,2	XXX	47	89	10	0.55		
9,3	XXX	47	89	10	0.55		
9,4	XXX	47	89	10	0.55		
9,5	XXX	47	89	10	0.55		
9,6	XXX	47	89	10	0.55		
9,7	XXX	47	89	10	0.55		
9,8	XXX	47	89	10	0.55		
9,9	XXX	47	89	10	0.55		
10	XXX	47	89	10	0.55		
10,2	XXX	55	102	12	0.55		
10,3	XXX	55	102	12	0.55		
10,5	XXX	55	102	12	0.55		
10,8	XXX	55	102	12	0.55		
11	XXX	55	102	12	0.55		
11,5	XXX	55	102	12	0.55		
11,8	XXX	55	102	12	0.55		
12	XXX	55	102	12	0.55		
12,5	XXX	60	107	14	0.65		
12,8	XXX	60	107	14	0.65		
13	XXX	60	107	14	0.65		
13,5	XXX	60	107	14	0.65		
13,8	XXX	60	107	14	0.65		
14	XXX	60	107	14	0.65		
14,5	XXX	65	115	16	0.65		
14,8	XXX	65	115	16	0.65		
15	XXX	65	115	16	0.65		
15,5	XXX	65	115	16	0.65		
15,8	XXX	65	115	16	0.65		
16	XXX	65	115	16	0.65		
16,5	XXX	73	123	18	0.7		
16,8	XXX	73	123	18	0.7		
17	XXX	73	123	18	0.7		
17,5	XXX	73	123	18	0.7		
17,8	XXX	73	123	18	0.7		
18	XXX	73	123	18	0.7		
18,5	XXX	79	131	20	0.7		
18,8	XXX	79	131	20	0.7		
19	XXX	79	131	20	0.7		
19,5	XXX	79	131	20	0.7		
19,8	XXX	79	131	20	0.7		
20	XXX	79	131	20	0.7		

Solid carbide | DIN 6537 K | 4×D | Type H | h7 | 2 | 140° | h6 DIN 6535 HA | HPC

Garant

Solid carbide HPC drills for hard machining

Cutting chisel edge with **high centring accuracy** due to strong core and special point geometry. **Convex major cutting edges** with **defined honed edge** ensure the drill has high stability and maximum load capacity.
Special multi-nano layer coating for drilling in hardened steels.

Recommendation: Maximum drilling depth:
flute length (see table) less 1.5×nominal ∅.

Note:	Form HB and HE supplied at the same price as HA. Form **HB:** order with **No. 122362 / 122372**. Form **HE:** order with **No. 122361 / 122371 + 129100HE**.

Plain shank DIN 6535 HA 12 2361

Plain shank DIN 6535 HA 12 2371

25 bar

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	TOOLOX® 33 HRC	TOOLOX® 44 HRC	HARDOX® 500 < 1600 N	GG(G)	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	H	H	H	K						
12 2361				90	80	**70**	**65**	**55**	**28**	**16**	**14**	**10**		30	28	28	**70**	●		●		●	
12 2371				120	**100**	**85**	**70**	**55**	**28**	**16**	**14**	**10**		**30**	**28**	**28**	**70**	●		●	●		●

∅ h7	11E 12 2361	11E 12 2371						∅ h7	11E 12 2361	11E 12 2371					
	Diabolo solid carbide HPC drill, plain shank DIN 6535 HA			L_{tot}		< 60 HRC f			Diabolo solid carbide HPC drill, plain shank DIN 6535 HA			L_{tot}		< 60 HRC f	
mm or inch	TiAlN	TiAlN	mm	mm	mm	12 2361 mm/ rev.	12 2371 mm/ rev.	mm or inch	TiAlN	TiAlN	mm	mm	mm	12 2361 mm/ rev.	12 2371 mm/ rev.
1	XXX	XXX	7	45	4	0.03	0.01	6,6	XXX	XXX	34	79	8	0.09	0.08
1,1	XXX	XXX	7	45	4	0.03	0.01	6,8	XXX	XXX	34	79	8	0.09	0.08
1,2	XXX	XXX	7	45	4	0.03	0.01	6,9	XXX	XXX	34	79	8	0.09	0.08
1,3	XXX	XXX	7	45	4	0.03	0.01	7	XXX	XXX	34	79	8	0.09	0.08
1,4	XXX	XXX	7	45	4	0.03	0.01	7,1	XXX	XXX	41	79	8	0.09	0.08
1,5	XXX	XXX	14	55	4	0.03	0.01	7,2	XXX	XXX	41	79	8	0.09	0.08
1,6	XXX	XXX	14	55	4	0.04	0.013	7,3	–	XXX	41	79	8	–	0.08
1,7	XXX	XXX	14	55	4	0.04	0.013	7,4	–	XXX	41	79	8	–	0.08
1,8	XXX	XXX	14	55	4	0.04	0.013	7,5	XXX	XXX	41	79	8	0.09	0.08
1,9	XXX	XXX	14	55	4	0.04	0.013	7,8	XXX	XXX	41	79	8	0.09	0.08
2	XXX	XXX	20	55	4	0.04	0.013	7,9	XXX	–	41	79	8	0.09	–
2,1	XXX	XXX	20	55	4	0.05	0.02	8	XXX	XXX	41	79	8	0.09	0.08
2,2	XXX	XXX	20	55	4	0.05	0.02	8,1	XXX	–	47	89	10	0.11	–
2,3	XXX	XXX	20	55	4	0.05	0.02	8,2	XXX	–	47	89	10	0.11	–
2,4	XXX	XXX	20	55	4	0.05	0.02	8,3	–	XXX	47	89	10	–	0.12
2,5	XXX	XXX	20	55	4	0.05	0.02	8,5	XXX	XXX	47	89	10	0.11	0.12
2,6	XXX	XXX	20	55	4	0.05	0.02	8,6	XXX	–	47	89	10	0.11	–
2,7	XXX	XXX	20	55	4	0.05	0.02	8,7	XXX	XXX	47	89	10	0.11	0.12
2,8	XXX	XXX	20	55	4	0.05	0.02	8,8	XXX	XXX	47	89	10	0.11	0.12
2,9	XXX	XXX	20	55	4	0.05	0.02	9	XXX	XXX	47	89	10	0.11	0.12
3	XXX	XXX	20	62	6	0.05	0.02	9,5	XXX	–	47	89	10	0.11	–
3,1	XXX	XXX	20	62	6	0.06	0.03	9,7	–	XXX	47	89	10	–	0.12
3,2	XXX	XXX	20	62	6	0.06	0.03	9,8	XXX	XXX	47	89	10	0.11	0.12
3,3	XXX	XXX	20	62	6	0.06	0.03	9,9	XXX	–	47	89	10	0.11	–
3,4	XXX	XXX	20	62	6	0.06	0.03	10	XXX	XXX	47	89	10	0.11	0.12
3,5	XXX	XXX	20	62	6	0.06	0.03	10,2	XXX	XXX	55	102	12	0.11	0.12
3,6	XXX	–	20	62	6	0.06	–	10,3	XXX	XXX	55	102	12	0.11	0.12
3,7	XXX	–	20	62	6	0.06	–	10,5	XXX	XXX	55	102	12	0.11	0.12
3,8	XXX	–	24	66	6	0.06	–	10,8	XXX	XXX	55	102	12	0.11	0.12
3,9	XXX	–	24	66	6	0.06	–	11	XXX	XXX	55	102	12	0.11	0.12
4	XXX	XXX	24	66	6	0.06	0.03	11,5	XXX	XXX	55	102	12	0.11	0.12
4,1	XXX	–	24	66	6	0.07	–	11,8	XXX	XXX	55	102	12	0.11	0.12
4,2	XXX	XXX	24	66	6	0.07	0.04	12	XXX	XXX	55	102	12	0.11	0.12
4,3	XXX	XXX	24	66	6	0.07	0.04	12,2	–	XXX	60	107	14	–	0.16
4,4	XXX	XXX	24	66	6	0.07	0.04	12,5	XXX	XXX	60	107	14	0.13	0.16
4,5	XXX	XXX	24	66	6	0.07	0.04	12,8	XXX	XXX	60	107	14	0.13	0.16
4,6	XXX	XXX	24	66	6	0.07	0.04	13	XXX	XXX	60	107	14	0.13	0.16
4,7	–	XXX	24	66	6	–	0.04	13,5	XXX	XXX	60	107	14	0.13	0.16
4,8	XXX	XXX	28	66	6	0.07	0.04	13,8	XXX	–	60	107	14	0.13	–
4,9	XXX	–	28	66	6	0.07	–	14	XXX	XXX	60	107	14	0.13	0.16
5	XXX	XXX	28	66	6	0.07	0.04	14,5	XXX	XXX	65	115	16	0.13	0.16
5,1	XXX	XXX	28	66	6	0.08	0.055	14,8	XXX	–	65	115	16	0.13	–
5,2	XXX	XXX	28	66	6	0.08	0.055	14,9	XXX	–	65	115	16	0.13	–
5,3	XXX	–	28	66	6	0.08	–	15	XXX	–	65	115	16	0.13	–
5,5	XXX	XXX	28	66	6	0.08	0.055	15,5	XXX	XXX	65	115	16	0.13	0.16
5,6	XXX	XXX	28	66	6	0.08	0.055	15,8	XXX	XXX	65	115	16	0.13	0.16
5,8	XXX	–	28	66	6	0.08	–	15,9	XXX	–	65	115	16	0.13	–
5,9	XXX	–	28	66	6	0.08	–	16	XXX	XXX	65	115	16	0.13	0.16
6	XXX	XXX	28	66	6	0.08	0.055	16,5	XXX	XXX	73	123	18	0.15	0.2
6,1	XXX	XXX	34	79	8	0.09	0.08	17	XXX	XXX	73	123	18	0.15	0.2
6,2	XXX	XXX	34	79	8	0.09	0.08	17,5	XXX	XXX	73	123	18	0.15	0.2
6,3	XXX	XXX	34	79	8	0.09	0.08	18	XXX	XXX	73	123	18	0.15	0.2
6,4	XXX	–	34	79	8	0.09	–	20	XXX	XXX	79	131	20	0.15	0.2
6,5	XXX	XXX	34	79	8	0.09	0.08								

Solid carbide | DIN 6537 K | 4×D | h7 | 2 | 135° | h6 DIN 6535 HA | 25 bar | HPC

Garant

Solid carbide HPC drill

Cutting chisel edge with **high centring accuracy** due to **strong core and special point geometry. Straight major cutting edges** with slightly honed edges and special flute profile produce **short chips.**

Recommendation: Maximum drilling depth:
Flute length (see table) less 1.5×nominal ∅.

Note:	Form HB and HE supplied at the same price as HA. Form **HB:** order with **No. 122385**. Form **HE:** order with **No. 122380 + 12900HE**.

Plain shank DIN 6535 HA 12 2380

Weldon shank DIN 6535 HB 12 2385

Whistle-Notch shank DIN 6535 HE 12 2380 + 12 9100HE

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	Graphite GRP CRP	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	N						
12 2380		245		**110**	**90**	**85**	**60**	35						**55**	**50**	**35**		●		●	●		●

∅ h7	11E	12 2380 Solid carbide HPC drill plain shank DIN 6535 HA				INOX < 900 N
mm		TiAlN	mm	L_{tot} mm	mm	f mm/rev.
1		XXX	7	45	4	0.05
1,1		XXX	7	45	4	0.05
1,2		XXX	7	45	4	0.05
1,3		XXX	7	45	4	0.05
1,4		XXX	7	45	4	0.05
1,5		XXX	14	55	4	0.05
1,6		XXX	14	55	4	0.05
1,7		XXX	14	55	4	0.05
1,8		XXX	14	55	4	0.05
1,9		XXX	14	55	4	0.05
2		XXX	20	55	4	0.07
2,1		XXX	20	55	4	0.07
2,2		XXX	20	55	4	0.07
2,3		XXX	20	55	4	0.07
2,4		XXX	20	55	4	0.07
2,5		XXX	20	55	4	0.07
2,6		XXX	20	55	4	0.07
2,7		XXX	20	55	4	0.07
2,8		XXX	20	55	4	0.07
2,9		XXX	20	55	4	0.07
3		XXX	20	62	6	0.09
3,1		XXX	20	62	6	0.09
3,2		XXX	20	62	6	0.09
3,3		XXX	20	62	6	0.09
3,4		XXX	20	62	6	0.09
3,5		XXX	20	62	6	0.09
3,7		XXX	20	62	6	0.09
3,8		XXX	24	66	6	0.09
3,9		XXX	24	66	6	0.09
4		XXX	24	66	6	0.09
4,1		XXX	24	66	6	0.09
4,2		XXX	24	66	6	0.09
4,3		XXX	24	66	6	0.09
4,5		XXX	24	66	6	0.09
4,6		XXX	24	66	6	0.09
4,8		XXX	28	66	6	0.09
4,9		XXX	28	66	6	0.09
5		XXX	28	66	6	0.09
5,1		XXX	28	66	6	0.09
5,2		XXX	28	66	6	0.09
5,5		XXX	28	66	6	0.09
5,6		XXX	28	66	6	0.09
5,7		XXX	28	66	6	0.09

∅ h7	11E	12 2380 Solid carbide HPC drill plain shank DIN 6535 HA				INOX < 900 N
mm		TiAlN	mm	L_{tot} mm	mm	f mm/rev.
5,8		XXX	28	66	6	0.09
6		XXX	28	66	6	0.12
6,1		XXX	34	79	8	0.12
6,2		XXX	34	79	8	0.12
6,3		XXX	34	79	8	0.12
6,4		XXX	34	79	8	0.12
6,5		XXX	34	79	8	0.12
6,6		XXX	34	79	8	0.12
6,8		XXX	34	79	8	0.12
6,9		XXX	34	79	8	0.12
7		XXX	34	79	8	0.12
7,45		XXX	41	79	8	0.12
7,8		XXX	41	79	8	0.12
8		XXX	41	79	8	0.12
8,5		XXX	47	89	10	0.12
9		XXX	47	89	10	0.15
9,35		XXX	47	89	10	0.15
9,5		XXX	47	89	10	0.15
9,8		XXX	47	89	10	0.15
10		XXX	47	89	10	0.15
10,2		XXX	55	102	12	0.15
10,3		XXX	55	102	12	0.15
10,5		XXX	55	102	12	0.15
10,8		XXX	55	102	12	0.15
11		XXX	55	102	12	0.15
11,5		XXX	55	102	12	0.15
11,8		XXX	55	102	12	0.15
12		XXX	55	102	12	0.18
12,2		XXX	60	107	14	0.18
12,5		XXX	60	107	14	0.18
12,8		XXX	60	107	14	0.18
13		XXX	60	107	14	0.18
13,5		XXX	60	107	14	0.18
13,8		XXX	60	107	14	0.18
14		XXX	60	107	14	0.18
15		XXX	65	115	16	0.18
15,8		XXX	65	115	16	0.18
16		XXX	65	115	16	0.2
16,5		XXX	73	123	18	0.2
17		XXX	73	123	18	0.2
18,5		XXX	79	131	20	0.2
19,5		XXX	79	131	20	0.23
20		XXX	79	131	20	0.23

Solid carbide | DIN 6537 K | 4×D | m7 | 2 | 140° | h6 DIN 6535 HA

HOLEX Solid carbide high performance drill

Cutting chisel edge with **high centring accuracy** due to **strong core and special point geometry. Straight major cutting edges** with slightly honed edges and special flute profile produce **short chips.**

Recommendation: **Maximum drilling depth:**
clamping slot length (see table) less 1.5×nominal Ø.

Note: Form HB and HE supplied at the same price as HA.
Form **HB:** order with **No. 122396**.
Form **HE:** order with **No. 122398**.

Plain shank DIN 6535 HA 12 2394

Weldon shank DIN 6535 HB 12 2396

Whistle-Notch shank DIN 6535 HE 12 2398

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG	Uni
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	K	
12 2394		140	120	80	75	65	60	35						35	30		70	●

Ø m7	12 2394 Solid carbide high performance drill plain shank DIN 6535 HA TiAlN	L_{tot}	INOX < 900 N f
mm		mm	mm/rev.
1	XXX	45	0.02
1,1	XXX	45	0.02
1,2	XXX	45	0.02
1,3	XXX	45	0.02
1,4	XXX	45	0.02
1,5	XXX	50	0.02
1,6	XXX	50	0.02
1,7	XXX	50	0.02
1,8	XXX	50	0.02
1,9	XXX	50	0.02
2	XXX	58	0.05
2,1	XXX	58	0.05
2,2	XXX	58	0.05
2,3	XXX	58	0.05
2,4	XXX	58	0.05
2,5	XXX	58	0.05
2,6	XXX	58	0.05
2,7	XXX	58	0.05
2,8	XXX	58	0.05
2,9	XXX	58	0.05
3	XXX	62	0.07
3,1	XXX	62	0.07
3,2	XXX	62	0.07
3,3	XXX	62	0.07
3,4	XXX	62	0.07
3,5	XXX	62	0.07
3,6	XXX	62	0.07
3,7	XXX	62	0.07
3,8	XXX	66	0.07
3,9	XXX	66	0.07
4	XXX	66	0.07
4,1	XXX	66	0.07
4,2	XXX	66	0.07
4,3	XXX	66	0.07
4,4	XXX	66	0.07
4,5	XXX	66	0.07
4,6	XXX	66	0.07
4,7	XXX	66	0.07
4,8	XXX	66	0.07
4,9	XXX	66	0.07
5	XXX	66	0.07
5,1	XXX	66	0.07
5,2	XXX	66	0.07

Ø m7	12 2394 Solid carbide high performance drill plain shank DIN 6535 HA TiAlN	L_{tot}	INOX < 900 N f
mm		mm	mm/rev.
5,3	XXX	66	0.07
5,4	XXX	66	0.07
5,5	XXX	66	0.07
5,6	XXX	66	0.07
5,7	XXX	66	0.07
5,8	XXX	66	0.07
5,9	XXX	66	0.07
6	XXX	66	0.1
6,1	XXX	79	0.1
6,2	XXX	79	0.1
6,3	XXX	79	0.1
6,4	XXX	79	0.1
6,5	XXX	79	0.1
6,6	XXX	79	0.1
6,7	XXX	79	0.1
6,8	XXX	79	0.1
6,9	XXX	79	0.1
7	XXX	79	0.1
7,1	XXX	79	0.1
7,2	XXX	79	0.1
7,3	XXX	79	0.1
7,4	XXX	79	0.1
7,5	XXX	79	0.1
7,6	XXX	79	0.1
7,7	XXX	79	0.1
7,8	XXX	79	0.1
7,9	XXX	79	0.1
8	XXX	79	0.1
8,1	XXX	89	0.1
8,2	XXX	89	0.1
8,3	XXX	89	0.1
8,4	XXX	89	0.1
8,5	XXX	89	0.1
8,6	XXX	89	0.1
8,7	XXX	89	0.1
8,8	XXX	89	0.1
8,9	XXX	89	0.1
9	XXX	89	0.12
9,1	XXX	89	0.12
9,2	XXX	89	0.12
9,3	XXX	89	0.12
9,4	XXX	89	0.12
9,5	XXX	89	0.12

Ø m7	12 2394 Solid carbide high performance drill plain shank DIN 6535 HA TiAlN	L_{tot}	INOX < 900 N f
mm		mm	mm/rev.
9,6	XXX	89	0.12
9,7	XXX	89	0.12
9,8	XXX	89	0.12
9,9	XXX	89	0.12
10	XXX	89	0.12
10,2	XXX	102	0.12
10,3	XXX	102	0.12
10,5	XXX	102	0.12
10,8	XXX	102	0.12
11	XXX	102	0.12
11,2	XXX	102	0.12
11,5	XXX	102	0.12
11,8	XXX	102	0.12
12	XXX	102	0.15
12,2	XXX	107	0.15
12,5	XXX	107	0.15
12,8	XXX	107	0.15
13	XXX	107	0.15
13,5	XXX	107	0.15
13,8	XXX	107	0.15
14	XXX	107	0.15
14,2	XXX	115	0.15
14,5	XXX	115	0.15
14,8	XXX	115	0.15
15	XXX	115	0.15
15,1	XXX	115	0.15
15,2	XXX	115	0.15
15,5	XXX	115	0.15
15,8	XXX	115	0.15
16	XXX	115	0.16
16,5	XXX	123	0.16
17	XXX	123	0.16
17,3	XXX	123	0.16
17,5	XXX	123	0.16
17,7	XXX	123	0.16
18	XXX	123	0.16
18,5	XXX	131	0.16
19	XXX	131	0.16
19,3	XXX	131	0.16
19,5	XXX	131	0.18
20	XXX	131	0.18

Solid carbide	DIN 6537 K	4×D	m7	2	140°	h6 DIN 6535 HA	25 bar

HOLEX Solid carbide high performance drill

Cutting chisel edge with **high centring accuracy** due to **strong core and special point geometry. Straight major cutting edges** with slightly honed edges and special flute profile produce **short chips.**

Recommendation: **Maximum drilling depth:**
Flute length (see table) less 1.5×nominal Ø.

Note:
Form HB and HE supplied at the same price as HA.
Form **HB:** order with **No. 122406**.
Form **HE:** order with **No. 122408**.

Plain shank DIN 6535 HA 12 2404

Weldon shank DIN 6535 HB 12 2406

Whistle-Notch shank DIN 6535 HE 12 2408

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG	Uni
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	K	
12 2404		140	120	110	90	80	60	35						45	40	30	70	●

Ø m7	12 2404 Solid carbide high performance drill plain shank DIN 6535 HA TiAlN	L_{tot}	INOX < 900 N f
mm		mm	mm/rev.
1	XXX	6	0.02
1,1	XXX	6.5	0.02
1,2	XXX	7	0.02
1,3	XXX	8	0.02
1,4	XXX	8.5	0.02
1,5	XXX	9	0.02
1,6	XXX	9.5	0.02
1,7	XXX	10	0.02
1,8	XXX	11	0.02
1,9	XXX	11.5	0.02
2	XXX	12	0.05
2,1	XXX	12.5	0.05
2,2	XXX	13	0.05
2,3	XXX	14	0.05
2,4	XXX	14.5	0.05
2,5	XXX	15	0.05
2,6	XXX	15.5	0.05
2,7	XXX	16	0.05
2,8	XXX	17	0.05
2,9	XXX	17.5	0.05
3	XXX	20	0.07
3,1	XXX	20	0.07
3,2	XXX	20	0.07
3,3	XXX	20	0.07
3,4	XXX	20	0.07
3,5	XXX	20	0.07
3,6	XXX	20	0.07
3,7	XXX	20	0.07
3,8	XXX	24	0.07
3,9	XXX	24	0.07
4	XXX	24	0.07
4,1	XXX	24	0.07
4,2	XXX	24	0.07
4,3	XXX	24	0.07
4,4	XXX	24	0.07
4,5	XXX	24	0.07
4,6	XXX	24	0.07
4,7	XXX	24	0.07
4,8	XXX	28	0.07
4,9	XXX	28	0.07
5	XXX	28	0.07
5,1	XXX	28	0.07
5,2	XXX	28	0.07

Ø m7	12 2404 Solid carbide high performance drill plain shank DIN 6535 HA TiAlN	L_{tot}	INOX < 900 N f
mm		mm	mm/rev.
5,3	XXX	28	0.07
5,4	XXX	28	0.07
5,5	XXX	28	0.07
5,6	XXX	28	0.07
5,7	XXX	28	0.07
5,8	XXX	28	0.07
5,9	XXX	28	0.07
6	XXX	28	0.1
6,1	XXX	34	0.1
6,2	XXX	34	0.1
6,3	XXX	34	0.1
6,4	XXX	34	0.1
6,5	XXX	34	0.1
6,6	XXX	34	0.1
6,7	XXX	34	0.1
6,8	XXX	34	0.1
6,9	XXX	34	0.1
7	XXX	34	0.1
7,1	XXX	41	0.1
7,2	XXX	41	0.1
7,3	XXX	41	0.1
7,4	XXX	41	0.1
7,5	XXX	41	0.1
7,6	XXX	41	0.1
7,7	XXX	41	0.1
7,8	XXX	41	0.1
7,9	XXX	41	0.1
8	XXX	41	0.1
8,1	XXX	47	0.1
8,2	XXX	47	0.1
8,3	XXX	47	0.1
8,4	XXX	47	0.1
8,5	XXX	47	0.1
8,6	XXX	47	0.1
8,7	XXX	47	0.1
8,8	XXX	47	0.1
8,9	XXX	47	0.1
9	XXX	47	0.12
9,1	XXX	47	0.12
9,2	XXX	47	0.12
9,3	XXX	47	0.12
9,4	XXX	47	0.12
9,5	XXX	47	0.12

Ø m7	12 2404 Solid carbide high performance drill plain shank DIN 6535 HA TiAlN	L_{tot}	INOX < 900 N f
mm		mm	mm/rev.
9,6	XXX	47	0.12
9,7	XXX	47	0.12
9,8	XXX	47	0.12
9,9	XXX	47	0.12
10	XXX	47	0.12
10,2	XXX	55	0.12
10,3	XXX	55	0.12
10,5	XXX	55	0.12
10,8	XXX	55	0.12
11	XXX	55	0.12
11,2	XXX	55	0.12
11,5	XXX	55	0.12
11,8	XXX	55	0.12
12	XXX	55	0.15
12,2	XXX	60	0.15
12,5	XXX	60	0.15
12,8	XXX	60	0.15
13	XXX	60	0.15
13,5	XXX	60	0.15
13,8	XXX	60	0.15
14	XXX	60	0.15
14,2	XXX	65	0.15
14,5	XXX	65	0.15
14,8	XXX	65	0.15
15	XXX	65	0.15
15,1	XXX	65	0.15
15,2	XXX	65	0.15
15,5	XXX	65	0.15
15,8	XXX	65	0.15
16	XXX	65	0.16
16,5	XXX	73	0.16
16,8	XXX	73	0.16
17	XXX	73	0.16
17,3	XXX	73	0.16
17,5	XXX	73	0.16
17,7	XXX	73	0.16
18	XXX	73	0.16
18,5	XXX	79	0.16
19	XXX	79	0.16
19,3	XXX	79	0.16
19,5	XXX	79	0.18
20	XXX	79	0.18

Solid carbide | DIN 6537 K | 4×D | m6 | 2 | 140° | h6 DIN 6535 HA | 25 bar | HPC

Garant

Solid carbide HPC drill with 4 cooling channels

Cutting chisel edge with **high centring accuracy** due to **strong core and special point geometry.** Excellent chip evacuation due to **4 internal coolant channels. Straight cutting edges** with honed edges and special flute profile for **short chips. Special coating** for the **best tool life** and **high metal removal rates.**

Recommendation: Maximum drilling depth:
Flute length (see table) less 1.5×nominal ∅.

Note:
Form HB and HE supplied at the same price as HA.
Form **HB:** order with **No. 122432**.
Form **HE:** order with **No. 122430 + 129100HE**.

Plain shank DIN 6535 HA 12 2430

Weldon shank DIN 6535 HB 12 2432

Whistle-notch shank DIN 6535 HE 12 2430 + 12 9100HE

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	Inconel®	Graphite GRP CRP					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	S	N					
12 2430																40	35		●				

∅ m6	12 2430					Inconel®
	Solid carbide HPC drill plain shank DIN 6535 HA		L_{tot}			f
mm	TiAlN	mm	mm	mm	mm	mm/rev.
4	XXX	24	66	6	0.04	
4,1	XXX	24	66	6	0.04	
4,2	XXX	24	66	6	0.04	
4,3	XXX	24	66	6	0.04	
4,4	XXX	24	66	6	0.04	
4,5	XXX	24	66	6	0.04	
4,6	XXX	24	66	6	0.04	
4,7	XXX	24	66	6	0.04	
4,8	XXX	28	66	6	0.04	
4,9	XXX	28	66	6	0.06	
5	XXX	28	66	6	0.06	
5,1	XXX	28	66	6	0.06	
5,2	XXX	28	66	6	0.06	
5,3	XXX	28	66	6	0.06	
5,4	XXX	28	66	6	0.06	
5,5	XXX	28	66	6	0.06	
5,6	XXX	28	66	6	0.06	
5,7	XXX	28	66	6	0.06	
5,8	XXX	28	66	6	0.06	
5,9	XXX	28	66	6	0.06	
6	XXX	28	66	6	0.08	
6,1	XXX	34	79	8	0.08	
6,2	XXX	34	79	8	0.08	
6,3	XXX	34	79	8	0.08	
6,4	XXX	34	79	8	0.08	
6,5	XXX	34	79	8	0.08	
6,6	XXX	34	79	8	0.08	
6,8	XXX	34	79	8	0.08	
6,9	XXX	34	79	8	0.08	
7	XXX	34	79	8	0.08	
7,1	XXX	41	79	8	0.08	
7,2	XXX	41	79	8	0.08	
7,3	XXX	41	79	8	0.08	
7,4	XXX	41	79	8	0.08	
7,5	XXX	41	79	8	0.08	
7,6	XXX	41	79	8	0.08	
7,7	XXX	41	79	8	0.08	
7,8	XXX	41	79	8	0.08	
7,9	XXX	41	79	8	0.08	
8	XXX	41	79	8	0.08	
8,1	XXX	47	89	10	0.12	
8,2	XXX	47	89	10	0.12	
8,3	XXX	47	89	10	0.12	

∅ m6	12 2430					Inconel®
	Solid carbide HPC drill plain shank DIN 6535 HA		L_{tot}			f
mm	TiAlN	mm	mm	mm	mm	mm/rev.
8,4	XXX	47	89	10	0.12	
8,5	XXX	47	89	10	0.12	
8,6	XXX	47	89	10	0.12	
8,7	XXX	47	89	10	0.12	
8,8	XXX	47	89	10	0.12	
8,9	XXX	47	89	10	0.12	
9	XXX	47	89	10	0.12	
9,1	XXX	47	89	10	0.12	
9,3	XXX	47	89	10	0.12	
9,4	XXX	47	89	10	0.12	
9,5	XXX	47	89	10	0.12	
9,8	XXX	47	89	10	0.12	
10	XXX	47	89	10	0.12	
10,2	XXX	55	102	12	0.12	
10,5	XXX	55	102	12	0.12	
10,8	XXX	55	102	12	0.12	
11	XXX	55	102	12	0.12	
11,2	XXX	55	102	12	0.12	
11,5	XXX	55	102	12	0.12	
11,8	XXX	55	102	12	0.12	
12	XXX	55	102	12	0.12	
12,2	XXX	60	107	14	0.16	
12,5	XXX	60	107	14	0.16	
12,8	XXX	60	107	14	0.16	
13	XXX	60	107	14	0.16	
13,5	XXX	60	107	14	0.16	
13,8	XXX	60	107	14	0.16	
14	XXX	60	107	14	0.16	
14,2	XXX	65	115	16	0.16	
14,5	XXX	65	115	16	0.16	
15	XXX	65	115	16	0.16	
15,2	XXX	65	115	16	0.16	
15,5	XXX	65	115	16	0.16	
15,8	XXX	65	115	16	0.16	
16	XXX	65	115	16	0.16	
16,5	XXX	73	123	18	0.2	
17	XXX	73	123	18	0.2	
17,5	XXX	73	123	18	0.2	
18	XXX	73	123	18	0.2	
18,5	XXX	79	131	20	0.2	
19	XXX	79	131	20	0.2	
20	XXX	79	131	20	0.2	

Solid carbide | DIN 6537 K | 4×D | h7 | 2 | 135° | h6 DIN 6535 HA | HPC

GARANT Master Steel SPEED solid carbide drill

Developed for use with **very high cutting speeds**. Outstandingly suitable for machines with **low power output** and high speeds.

- Clear reduction in cutting forces due to special cutter geometry.
- Coating for best wear resistance even at high process temperatures.
- Polished flutes for good chip clearance.

A **slim chisel edge** and the **special arrangement of the 4 guide chamfers** ensure **high positioning and alignment accuracy**. Optimised micro-geometry for increased working life and performance capability.

Recommendation: Maximum drilling depth:
flute length (see table) less 1.5×nominal ∅.

Note: Form HB and HE supplied at the same price as HA.
Form **HB:** order with **No. 122416**.
Form **HE:** order with **No. 122415 + 129100HE**.

Plain shank DIN 6535 HA 122415

Weldon shank DIN 6535 HB 122416

Whistle-Notch shank DIN 6535 HE 122415 + 129100HE

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	GG	GGG	Uni
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	K	K	
122415				170	150	120	110	60								110	100	●

∅ h7	11E	12 2415		L_{tot}		< 1100 N f
		Master Steel SPEED solid carbide drill, plain shank				
		DIN 6535 HA				
mm		TiAlN	mm	mm	mm	mm/rev.
2		XXX	20	55	4	0.09
2,1		XXX	20	55	4	0.09
2,2		XXX	20	55	4	0.09
2,3		XXX	20	55	4	0.09
2,4		XXX	20	55	4	0.09
2,5		XXX	20	55	4	0.09
2,6		XXX	20	55	4	0.09
2,7		XXX	20	55	4	0.09
2,8		XXX	20	55	4	0.09
2,9		XXX	20	55	4	0.09
3		XXX	20	62	6	0.12
3,1		XXX	20	62	6	0.12
3,2		XXX	20	62	6	0.12
3,3		XXX	20	62	6	0.12
3,4		XXX	20	62	6	0.12
3,5		XXX	20	62	6	0.12
3,6		XXX	20	62	6	0.12
3,7		XXX	20	62	6	0.12
3,8		XXX	24	66	6	0.12
3,9		XXX	24	66	6	0.12
4		XXX	24	66	6	0.12
4,1		XXX	24	66	6	0.16
4,2		XXX	24	66	6	0.16
4,3		XXX	24	66	6	0.16
4,4		XXX	24	66	6	0.16
4,5		XXX	24	66	6	0.16
4,6		XXX	24	66	6	0.16
4,7		XXX	24	66	6	0.16
4,8		XXX	28	66	6	0.16
4,9		XXX	28	66	6	0.16
5		XXX	28	66	6	0.16
5,1		XXX	28	66	6	0.19
5,2		XXX	28	66	6	0.19
5,3		XXX	28	66	6	0.19
5,4		XXX	28	66	6	0.19
5,5		XXX	28	66	6	0.19
5,6		XXX	28	66	6	0.19
5,7		XXX	28	66	6	0.19
5,8		XXX	28	66	6	0.19
5,9		XXX	28	66	6	0.19
6		XXX	28	66	6	0.19
6,1		XXX	34	79	8	0.22
6,2		XXX	34	79	8	0.22
6,3		XXX	34	79	8	0.22
6,4		XXX	34	79	8	0.22

∅ h7	11E	12 2415		L_{tot}		< 1100 N f
		Master Steel SPEED solid carbide drill, plain shank				
		DIN 6535 HA				
mm		TiAlN	mm	mm	mm	mm/rev.
6,5		XXX	34	79	8	0.22
6,6		XXX	34	79	8	0.22
6,7		XXX	34	79	8	0.22
6,8		XXX	34	79	8	0.22
6,9		XXX	34	79	8	0.22
7		XXX	34	79	8	0.22
7,1		XXX	41	79	8	0.22
7,2		XXX	41	79	8	0.22
7,3		XXX	41	79	8	0.22
7,4		XXX	41	79	8	0.22
7,5		XXX	41	79	8	0.22
7,6		XXX	41	79	8	0.22
7,7		XXX	41	79	8	0.22
7,8		XXX	41	79	8	0.22
7,9		XXX	41	79	8	0.22
8		XXX	41	79	8	0.22
8,1		XXX	47	89	10	0.26
8,2		XXX	47	89	10	0.26
8,3		XXX	47	89	10	0.26
8,4		XXX	47	89	10	0.26
8,5		XXX	47	89	10	0.26
8,6		XXX	47	89	10	0.26
8,7		XXX	47	89	10	0.26
8,8		XXX	47	89	10	0.26
8,9		XXX	47	89	10	0.26
9		XXX	47	89	10	0.26
9,1		XXX	47	89	10	0.26
9,2		XXX	47	89	10	0.26
9,3		XXX	47	89	10	0.26
9,4		XXX	47	89	10	0.26
9,5		XXX	47	89	10	0.26
9,6		XXX	47	89	10	0.26
9,7		XXX	47	89	10	0.26
9,8		XXX	47	89	10	0.26
9,9		XXX	47	89	10	0.26
10		XXX	47	89	10	0.26
10,1		XXX	55	102	12	0.28
10,2		XXX	55	102	12	0.28
10,3		XXX	55	102	12	0.28
10,4		XXX	55	102	12	0.28
10,5		XXX	55	102	12	0.28
10,6		XXX	55	102	12	0.28
10,7		XXX	55	102	12	0.28
10,8		XXX	55	102	12	0.28
10,9		XXX	55	102	12	0.28

∅ h7	11E	12 2415		L_{tot}		< 1100 N f
		Master Steel SPEED solid carbide drill, plain shank				
		DIN 6535 HA				
mm		TiAlN	mm	mm	mm	mm/rev.
11		XXX	55	102	12	0.28
11,1		XXX	55	102	12	0.28
11,2		XXX	55	102	12	0.28
11,3		XXX	55	102	12	0.28
11,4		XXX	55	102	12	0.28
11,5		XXX	55	102	12	0.28
11,6		XXX	55	102	12	0.28
11,7		XXX	55	102	12	0.28
11,8		XXX	55	102	12	0.28
11,9		XXX	55	102	12	0.28
12		XXX	55	102	12	0.28
12,2		XXX	60	107	14	0.31
12,5		XXX	60	107	14	0.31
12,8		XXX	60	107	14	0.31
13		XXX	60	107	14	0.31
13,2		XXX	60	107	14	0.31
13,5		XXX	60	107	14	0.31
13,8		XXX	60	107	14	0.31
14		XXX	60	107	14	0.31
14,2		XXX	65	115	16	0.34
14,5		XXX	65	115	16	0.34
14,8		XXX	65	115	16	0.34
15		XXX	65	115	16	0.34
15,2		XXX	65	115	16	0.34
15,5		XXX	65	115	16	0.34
15,8		XXX	65	115	16	0.34
16		XXX	65	115	16	0.34
16,2		XXX	73	123	18	0.35
16,5		XXX	73	123	18	0.35
16,8		XXX	73	123	18	0.35
17		XXX	73	123	18	0.35
17,2		XXX	73	123	18	0.35
17,5		XXX	73	123	18	0.35
17,8		XXX	73	123	18	0.35
18		XXX	73	123	18	0.35
18,2		XXX	79	131	20	0.38
18,5		XXX	79	131	20	0.38
18,8		XXX	79	131	20	0.38
19		XXX	79	131	20	0.38
19,2		XXX	79	131	20	0.38
19,5		XXX	79	131	20	0.38
19,8		XXX	79	131	20	0.38
20		XXX	79	131	20	0.38

Solid carbide | DIN 6537 K | 4×D | h7 | 2 | 135° | h6 DIN 6535 HA | 25 bar | HPC

GARANT Master Steel SPEED solid carbide drill

Developed for use with **very high cutting speeds**. Outstandingly suitable for machines with **low power output** and high speeds.

- Clear reduction in cutting forces due to special cutter geometry.
- Coating for best wear resistance even at high process temperatures.
- Polished flutes for good chip clearance.

A **slim chisel edge** and the **special arrangement of the 4 guide chamfers** ensure **high positioning and alignment accuracy**. Optimised micro-geometry for increased working life and performance capability.

Recommendation: **Maximum drilling depth:**
clamping slot length (see table) less 1.5×nominal ∅.

Note: Versions HB and HE supplied at the same price as HA.
Form **HB:** state **No.122426** on the order.
Form **HE:** order with **No.122425 + 129100HE**.

Plain shank DIN 6535 HA 122425

Weldon shank DIN 6535 HB 122426

Whistle-Notch shank DIN 6535 HE 122425 + 129100HE

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	GG	GGG	Uni
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	K	K	
122425				220	200	180	170	90						75		160	130	●

∅ h7	11E	122425					< 1100 N
		Master Steel SPEED solid carbide drill, plain shank		L_{tot}			f
		DIN 6535 HA					
mm		TiAlN	mm	mm	mm	mm/rev.	
2		XXX	20	55	4	0.09	
2,05		XXX	20	55	4	0.09	
2,1		XXX	20	55	4	0.09	
2,2		XXX	20	55	4	0.09	
2,3		XXX	20	55	4	0.09	
2,4		XXX	20	55	4	0.09	
2,5		XXX	20	55	4	0.09	
2,6		XXX	20	55	4	0.09	
2,7		XXX	20	55	4	0.09	
2,8		XXX	20	55	4	0.09	
2,9		XXX	20	55	4	0.09	
3		XXX	20	62	6	0.12	
3,1		XXX	20	62	6	0.12	
3,2		XXX	20	62	6	0.12	
3,3		XXX	20	62	6	0.12	
3,4		XXX	20	62	6	0.12	
3,5		XXX	20	62	6	0.12	
3,6		XXX	20	62	6	0.12	
3,7		XXX	20	62	6	0.12	
3,8		XXX	24	66	6	0.12	
3,9		XXX	24	66	6	0.12	
4		XXX	24	66	6	0.12	
4,1		XXX	24	66	6	0.16	
4,2		XXX	24	66	6	0.16	
4,3		XXX	24	66	6	0.16	
4,4		XXX	24	66	6	0.16	
4,5		XXX	24	66	6	0.16	
4,6		XXX	24	66	6	0.16	
4,65		XXX	24	66	6	0.16	
4,7		XXX	24	66	6	0.16	
4,8		XXX	28	66	6	0.16	
4,9		XXX	28	66	6	0.16	
5		XXX	28	66	6	0.16	
5,1		XXX	28	66	6	0.19	
5,2		XXX	28	66	6	0.19	
5,3		XXX	28	66	6	0.19	
5,4		XXX	28	66	6	0.19	
5,5		XXX	28	66	6	0.19	
5,55		XXX	28	66	6	0.19	
5,6		XXX	28	66	6	0.19	
5,7		XXX	28	66	6	0.19	
5,8		XXX	28	66	6	0.19	
5,9		XXX	28	66	6	0.19	
6		XXX	28	66	6	0.19	
6,1		XXX	34	79	8	0.22	
6,2		XXX	34	79	8	0.22	

∅ h7	11E	122425					< 1100 N
		Master Steel SPEED solid carbide drill, plain shank		L_{tot}			f
		DIN 6535 HA					
mm		TiAlN	mm	mm	mm	mm/rev.	
6,3		XXX	34	79	8	0.22	
6,4		XXX	34	79	8	0.22	
6,5		XXX	34	79	8	0.22	
6,6		XXX	34	79	8	0.22	
6,7		XXX	34	79	8	0.22	
6,8		XXX	34	79	8	0.22	
6,9		XXX	34	79	8	0.22	
7		XXX	34	79	8	0.22	
7,1		XXX	41	79	8	0.22	
7,2		XXX	41	79	8	0.22	
7,3		XXX	41	79	8	0.22	
7,4		XXX	41	79	8	0.22	
7,45		XXX	41	79	8	0.22	
7,5		XXX	41	79	8	0.22	
7,6		XXX	41	79	8	0.22	
7,7		XXX	41	79	8	0.22	
7,8		XXX	41	79	8	0.22	
7,9		XXX	41	79	8	0.22	
8		XXX	41	79	8	0.22	
8,1		XXX	47	89	10	0.26	
8,2		XXX	47	89	10	0.26	
8,3		XXX	47	89	10	0.26	
8,4		XXX	47	89	10	0.26	
8,5		XXX	47	89	10	0.26	
8,6		XXX	47	89	10	0.26	
8,7		XXX	47	89	10	0.26	
8,8		XXX	47	89	10	0.26	
8,9		XXX	47	89	10	0.26	
9		XXX	47	89	10	0.26	
9,1		XXX	47	89	10	0.26	
9,2		XXX	47	89	10	0.26	
9,3		XXX	47	89	10	0.26	
9,35		XXX	47	89	10	0.26	
9,4		XXX	47	89	10	0.26	
9,5		XXX	47	89	10	0.26	
9,6		XXX	47	89	10	0.26	
9,7		XXX	47	89	10	0.26	
9,8		XXX	47	89	10	0.26	
9,9		XXX	47	89	10	0.26	
10		XXX	47	89	10	0.26	
10,1		XXX	55	102	12	0.28	
10,2		XXX	55	102	12	0.28	
10,3		XXX	55	102	12	0.28	
10,4		XXX	55	102	12	0.28	
10,5		XXX	55	102	12	0.28	
10,6		XXX	55	102	12	0.28	

∅ h7	11E	122425					< 1100 N
		Master Steel SPEED solid carbide drill, plain shank		L_{tot}			f
		DIN 6535 HA					
mm		TiAlN	mm	mm	mm	mm/rev.	
10,7		XXX	55	102	12	0.28	
10,8		XXX	55	102	12	0.28	
10,9		XXX	55	102	12	0.28	
11		XXX	55	102	12	0.28	
11,1		XXX	55	102	12	0.28	
11,2		XXX	55	102	12	0.28	
11,3		XXX	55	102	12	0.28	
11,4		XXX	55	102	12	0.28	
11,5		XXX	55	102	12	0.28	
11,6		XXX	55	102	12	0.28	
11,7		XXX	55	102	12	0.28	
11,8		XXX	55	102	12	0.28	
11,9		XXX	55	102	12	0.28	
12		XXX	55	102	12	0.28	
12,2		XXX	60	107	14	0.31	
12,5		XXX	60	107	14	0.31	
12,8		XXX	60	107	14	0.31	
13		XXX	60	107	14	0.31	
13,2		XXX	60	107	14	0.31	
13,5		XXX	60	107	14	0.31	
13,8		XXX	60	107	14	0.31	
14		XXX	60	107	14	0.31	
14,2		XXX	65	115	16	0.34	
14,5		XXX	65	115	16	0.34	
14,8		XXX	65	115	16	0.34	
15		XXX	65	115	16	0.34	
15,2		XXX	65	115	16	0.34	
15,5		XXX	65	115	16	0.34	
15,8		XXX	65	115	16	0.34	
16		XXX	65	115	16	0.34	
16,2		XXX	73	123	18	0.35	
16,5		XXX	73	123	18	0.35	
16,8		XXX	73	123	18	0.35	
17		XXX	73	123	18	0.35	
17,2		XXX	73	123	18	0.35	
17,5		XXX	73	123	18	0.35	
17,8		XXX	73	123	18	0.35	
18		XXX	73	123	18	0.35	
18,2		XXX	79	131	20	0.38	
18,5		XXX	79	131	20	0.38	
18,8		XXX	79	131	20	0.38	
19		XXX	79	131	20	0.38	
19,2		XXX	79	131	20	0.38	
19,5		XXX	79	131	20	0.38	
19,8		XXX	79	131	20	0.38	
20		XXX	79	131	20	0.38	

Solid carbide | DIN 6537 K | 4×D | h7 | 3 | 145° | h6 DIN 6535 HA | 25 bar | HPC

GARANT Master Steel FEED solid carbide drill

3-flute drill, specially developed for **use at very high feed rates**. Extremely suitable for **machines with high power** output and stable machining conditions.

- Special point geometry with stable cutting edges and large clearance at the centre permits very high feed rates.
- The patented point geometry is optimised for chip flow and generates low cutting forces with good chip breakage.
- With 145° point angle for low burr formation when drilling through holes.

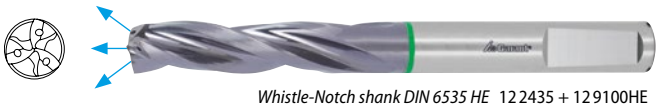
The **sector-leading technology of the chisel point** guarantees **optimum self-centring behaviour** and permits spot drilling on irregular surfaces.
3 guide chamfers guarantee a stable exit from the hole and an exact roundness of the hole.

Recommendation: Maximum drilling depth:
flute length (see table) less 1.5×nominal Ø.

Note: Form HB and HE supplied at the same price as HA.
Form **HB:** order with **No. 122436**.
Form **HE:** order with **No. 122435 + 129100HE**.

Plain shank DIN 6535 HA 12 2435

Weldon shank DIN 6535 HB 12 2436



Whistle-Notch shank DIN 6535 HE 12 2435 + 12 9100HE

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG	GGG	Uni
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	M	M	S	K	K	
12 2435				160	140	130	110	90	60				60	50	40	130	80	●

Ø h7 mm or inch	12 2435 GARANT Master Steel FEED solid carbide drill, plain shank DIN 6535 HA TiAlN	L_{tot} mm	mm	< 1100 N f mm/rev.
4	XXX	24	66	6	0.28
4,1	XXX	24	66	6	0.28
4,2	XXX	24	66	6	0.28
4,3	XXX	24	66	6	0.28
4,4	XXX	24	66	6	0.28
4,5	XXX	24	66	6	0.28
4,6	XXX	24	66	6	0.28
4,65	XXX	24	66	6	0.28
4,7	XXX	24	66	6	0.28
3/16	XXX	28	66	6	0.28
4,8	XXX	28	66	6	0.28
4,9	XXX	28	66	6	0.28
5	XXX	28	66	6	0.28
5,1	XXX	28	66	6	0.32
5,2	XXX	28	66	6	0.32
5,3	XXX	28	66	6	0.32
5,4	XXX	28	66	6	0.32
5,5	XXX	28	66	6	0.32
5,55	XXX	28	66	6	0.32
7/32	XXX	28	66	6	0.32
5,6	XXX	28	66	6	0.32
5,7	XXX	28	66	6	0.32
5,8	XXX	28	66	6	0.32
5,9	XXX	28	66	6	0.32
6	XXX	28	66	6	0.32
6,1	XXX	34	79	8	0.37
6,2	XXX	34	79	8	0.37
6,3	XXX	34	79	8	0.37
1/4	XXX	34	79	8	0.37
6,35	XXX	34	79	8	0.37
6,4	XXX	34	79	8	0.37
6,5	XXX	34	79	8	0.37
6,6	XXX	34	79	8	0.37
6,7	XXX	34	79	8	0.37
6,8	XXX	34	79	8	0.37
6,9	XXX	34	79	8	0.37
7	XXX	34	79	8	0.37
7,1	XXX	41	79	8	0.37
9/32	XXX	41	79	8	0.37
7,2	XXX	41	79	8	0.37
7,3	XXX	41	79	8	0.37
7,4	XXX	41	79	8	0.37
7,45	XXX	41	79	8	0.37
7,5	XXX	41	79	8	0.37

Ø h7 mm or inch	12 2435 GARANT Master Steel FEED solid carbide drill, plain shank DIN 6535 HA TiAlN	L_{tot} mm	mm	< 1100 N f mm/rev.
7,6	XXX	41	79	8	0.37
7,7	XXX	41	79	8	0.37
7,8	XXX	41	79	8	0.37
7,9	XXX	41	79	8	0.37
5/16	XXX	41	79	8	0.37
8	XXX	41	79	8	0.37
8,1	XXX	47	89	10	0.44
8,2	XXX	47	89	10	0.44
8,3	XXX	47	89	10	0.44
8,4	XXX	47	89	10	0.44
8,5	XXX	47	89	10	0.44
8,6	XXX	47	89	10	0.44
8,7	XXX	47	89	10	0.44
11/32	XXX	47	89	10	0.44
8,8	XXX	47	89	10	0.44
8,9	XXX	47	89	10	0.44
9	XXX	47	89	10	0.44
9,1	XXX	47	89	10	0.44
9,2	XXX	47	89	10	0.44
9,3	XXX	47	89	10	0.44
9,35	XXX	47	89	10	0.44
9,4	XXX	47	89	10	0.44
9,5	XXX	47	89	10	0.44
3/8	XXX	47	89	10	0.44
9,6	XXX	47	89	10	0.44
9,7	XXX	47	89	10	0.44
9,8	XXX	47	89	10	0.44
9,9	XXX	47	89	10	0.44
10	XXX	47	89	10	0.44
10,1	XXX	55	102	12	0.5
10,2	XXX	55	102	12	0.5
10,3	XXX	55	102	12	0.5
13/32	XXX	55	102	12	0.5
10,4	XXX	55	102	12	0.5
10,5	XXX	55	102	12	0.5
10,6	XXX	55	102	12	0.5
10,7	XXX	55	102	12	0.5
10,8	XXX	55	102	12	0.5
10,9	XXX	55	102	12	0.5
11	XXX	55	102	12	0.5
11,1	XXX	55	102	12	0.5
7/16	XXX	55	102	12	0.5
11,2	XXX	55	102	12	0.5
11,3	XXX	55	102	12	0.5

Ø h7 mm or inch	12 2435 GARANT Master Steel FEED solid carbide drill, plain shank DIN 6535 HA TiAlN	L_{tot} mm	mm	< 1100 N f mm/rev.
11,4	XXX	55	102	12	0.5
11,5	XXX	55	102	12	0.5
11,6	XXX	55	102	12	0.5
11,7	XXX	55	102	12	0.5
11,8	XXX	55	102	12	0.5
11,9	XXX	55	102	12	0.5
12	XXX	55	102	12	0.5
12,2	XXX	60	107	14	0.56
12,5	XXX	60	107	14	0.56
1/2	XXX	60	107	14	0.56
12,7	XXX	60	107	14	0.56
12,8	XXX	60	107	14	0.56
13	XXX	60	107	14	0.56
13,2	XXX	60	107	14	0.56
13,5	XXX	60	107	14	0.56
13,8	XXX	60	107	14	0.56
14	XXX	60	107	14	0.56
14,2	XXX	65	115	16	0.61
9/16	XXX	65	115	16	0.61
14,5	XXX	65	115	16	0.61
14,8	XXX	65	115	16	0.61
15	XXX	65	115	16	0.61
15,2	XXX	65	115	16	0.61
15,5	XXX	65	115	16	0.61
15,8	XXX	65	115	16	0.61
5/8	XXX	65	115	16	0.61
16	XXX	65	115	16	0.61
16,2	XXX	73	123	18	0.66
16,5	XXX	73	123	18	0.66
16,8	XXX	73	123	18	0.66
17	XXX	73	123	18	0.66
17,2	XXX	73	123	18	0.66
17,5	XXX	73	123	18	0.66
17,8	XXX	73	123	18	0.66
18	XXX	73	123	18	0.66
18,2	XXX	79	131	20	0.69
18,5	XXX	79	131	20	0.69
18,8	XXX	79	131	20	0.69
19	XXX	79	131	20	0.69
19,2	XXX	79	131	20	0.69
19,5	XXX	79	131	20	0.69
19,8	XXX	79	131	20	0.69
20	XXX	79	131	20	0.69

Solid carbide | DIN 6537 K | 4×D | h7 | 2 | 140° | h6 DIN 6535 HA | HPC

Garant

Solid carbide HPC drill

Cutting chisel edge with **high centring accuracy** due to **strong core and special point geometry. Convex cutting edges** with honed edges and special flute profile for **short chips**, even on long chipping materials.

Recommendation: Maximum drilling depth:
clamping slot length (see table) less 1.5×nominal ∅.

Note:
Form HB and HE supplied at the same price as HA.
Form **HB**: order with **No. 122445/122505**.
Form **HE**: order with **No. 122440/122500** and **129100HE**.
NEW GENERATION AVAILABLE!
Recommended successor products are No. 122415; 122425 and 122435.

Plain shank DIN 6535 HA 12 2440

Plain shank DIN 6535 HA 12 2500

25 bar

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	K						
12 2440				90	80	70	65	35								35	70	●		●		●	
12 2500				120	100	85	65	35						30		35	70	●		●	●		●

∅ h7	11E 12 2440	11E 12 2500				
	Solid carbide HPC drill plain shank DIN 6535 HA			L_{tot}		< 1100 N f
mm	TiAlN	TiAlN	mm	mm	mm	mm/rev.
1	XXX	XXX	7	45	4	0.03
1,1	XXX	–	7	45	4	0.03
1,2	XXX	–	7	45	4	0.03
1,3	XXX	–	7	45	4	0.03
1,4	XXX	–	7	45	4	0.03
1,5	XXX	XXX	14	55	4	0.03
1,6	XXX	XXX	14	55	4	0.03
1,7	XXX	XXX	14	55	4	0.03
1,8	XXX	XXX	14	55	4	0.05
1,9	XXX	XXX	14	55	4	0.05
2	XXX	XXX	20	55	4	0.05
2,1	XXX	XXX	20	55	4	0.05
2,2	XXX	XXX	20	55	4	0.07
2,3	XXX	–	20	55	4	0.07
2,4	XXX	XXX	20	55	4	0.07
2,5	XXX	XXX	20	55	4	0.07
2,6	XXX	XXX	20	55	4	0.07
2,7	XXX	–	20	55	4	0.07
2,8	XXX	XXX	20	55	4	0.11
2,9	XXX	XXX	20	55	4	0.11
3	XXX	XXX	20	62	6	0.11
3,1	XXX	XXX	20	62	6	0.11
3,2	XXX	XXX	20	62	6	0.11
3,3	XXX	XXX	20	62	6	0.11
3,4	XXX	–	20	62	6	0.11
3,5	XXX	XXX	20	62	6	0.11
3,6	XXX	–	20	62	6	0.11
3,7	XXX	XXX	20	62	6	0.11
3,8	XXX	XXX	24	66	6	0.11
3,9	XXX	XXX	24	66	6	0.11
4	XXX	XXX	24	66	6	0.15
4,1	XXX	XXX	24	66	6	0.15
4,2	XXX	XXX	24	66	6	0.15
4,3	XXX	XXX	24	66	6	0.15
4,4	XXX	–	24	66	6	0.15
4,5	XXX	XXX	24	66	6	0.15
4,6	XXX	–	24	66	6	0.15
4,8	XXX	XXX	28	66	6	0.15
4,9	XXX	–	28	66	6	0.15
5	XXX	XXX	28	66	6	0.15
5,1	XXX	XXX	28	66	6	0.15
5,2	XXX	XXX	28	66	6	0.15
5,3	XXX	–	28	66	6	0.15
5,4	XXX	–	28	66	6	0.15
5,5	XXX	XXX	28	66	6	0.15
5,6	XXX	–	28	66	6	0.15
5,7	–	XXX	28	66	6	0.15
5,8	XXX	XXX	28	66	6	0.15
5,9	XXX	–	28	66	6	0.15
6	XXX	XXX	28	66	6	0.2
6,1	XXX	–	34	79	8	0.2

∅ h7	11E 12 2440	11E 12 2500				
	Solid carbide HPC drill plain shank DIN 6535 HA			L_{tot}		< 1100 N f
mm	TiAlN	TiAlN	mm	mm	mm	mm/rev.
6,2	XXX	XXX	34	79	8	0.2
6,3	XXX	–	34	79	8	0.2
6,4	XXX	–	34	79	8	0.2
6,5	XXX	XXX	34	79	8	0.2
6,6	XXX	–	34	79	8	0.2
6,8	XXX	XXX	34	79	8	0.2
6,9	XXX	XXX	34	79	8	0.2
7	XXX	XXX	34	79	8	0.2
7,1	XXX	–	41	79	8	0.2
7,2	XXX	–	41	79	8	0.2
7,5	XXX	XXX	41	79	8	0.2
7,8	XXX	XXX	41	79	8	0.2
7,9	XXX	–	41	79	8	0.2
8	XXX	XXX	41	79	8	0.2
8,1	XXX	XXX	47	89	10	0.2
8,2	XXX	XXX	47	89	10	0.2
8,3	XXX	–	47	89	10	0.2
8,4	XXX	–	47	89	10	0.2
8,5	XXX	XXX	47	89	10	0.2
8,6	XXX	–	47	89	10	0.2
8,7	XXX	–	47	89	10	0.2
8,8	XXX	–	47	89	10	0.2
9	XXX	XXX	47	89	10	0.27
9,1	XXX	–	47	89	10	0.27
9,2	XXX	–	47	89	10	0.27
9,5	XXX	–	47	89	10	0.27
9,8	XXX	XXX	47	89	10	0.27
10	XXX	XXX	47	89	10	0.27
10,2	XXX	XXX	55	102	12	0.27
10,3	XXX	–	55	102	12	0.27
10,5	XXX	XXX	55	102	12	0.27
10,8	XXX	–	55	102	12	0.27
11	XXX	XXX	55	102	12	0.27
11,2	XXX	–	55	102	12	0.27
11,8	XXX	XXX	55	102	12	0.27
12	XXX	XXX	55	102	12	0.32
12,2	XXX	–	60	107	14	0.32
12,5	XXX	XXX	60	107	14	0.32
13	XXX	XXX	60	107	14	0.32
13,5	XXX	–	60	107	14	0.32
14	XXX	XXX	60	107	14	0.32
14,2	XXX	XXX	65	115	16	0.32
14,5	XXX	–	65	115	16	0.32
15	XXX	–	65	115	16	0.32
15,5	XXX	–	65	115	16	0.32
16	XXX	XXX	65	115	16	0.35
16,5	XXX	XXX	73	123	18	0.35
17	XXX	–	73	123	18	0.35
17,5	XXX	–	73	123	18	0.35
18	XXX	–	73	123	18	0.35

Solid carbide | DIN 6537 K | 4×D | h7 | 2 | 140° | h6 DIN 6535 HA

HOLEX Solid carbide high-performance drills

12 2501 – **HOLEX Pro Steel:**
Straight major cutting edges and a **special flute profile** ensure good chip evacuation. The robust cutter geometry ensures high-performance drilling with good process reliability.
A wide range of applications in steel materials thanks to a combination of tough ultra-fine grain carbide and an extremely wear-resistant coating.
Up to Ø 1.9 with 4 facets, from Ø 2 with relieved cone.

Recommendation: Maximum drilling depth:
Flute length (see table) less 1.5×nominal Ø.

Note:
12 2310 – **NEW GENERATION AVAILABLE!**
Recommended successor product is No. 122501.
12 2501 – Version HB and HE supplied at the same price as HA.
Form **HB:** state **No. 122502**.
Form **HE:** state **No. 122503**.

HPC
Plain shank DIN 6535 HA 12 2501

HPC
Weldon shank DIN 6535 HB 12 2502

HPC
Whistle-Notch shank DIN 6535 HE 12 2503

Plain shank DIN 6535 HA 12 2310

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	INOX < 900 N	INOX > 900 N	GG	GGG	GG(G)	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	M	M	K	K	K						
12 2310		140	120	**80**	**75**	**65**	60	35									70			●		●	
12 2501				**115**	**105**	**85**	**80**	**60**					**30**	25	**90**	**55**		●		●		●	

Ø h7	12F 12 2501	12E 12 2310						
	HOLEX Pro Steel solid carbide drill, plain shank	Solid carbide high performance drill, plain shank						
	DIN 6535 HA		12 2501	12 2310	12 2501	12 2310		12 2501
mm or inch	TiAlN	TiN	mm	mm	mm	mm	mm	mm/ rev.
1	XXX	XXX	6	7	45	45	4	0.05
1,1	XXX	XXX	6.5	7	45	45	4	0.05
1,2	XXX	XXX	7	7	45	45	4	0.05
1,3	XXX	–	8	–	45	–	4	0.05
1,4	XXX	XXX	8.5	7	45	45	4	0.05
1,5	XXX	XXX	9	14	50	55	4	0.05
1/16	XXX	–	9.5	–	50	–	4	0.05
1,6	XXX	XXX	9.5	14	50	55	4	0.05
1,7	XXX	XXX	10	14	50	55	4	0.07
1,8	XXX	XXX	11	14	50	55	4	0.07
1,9	XXX	XXX	11.5	14	50	55	4	0.07
2	XXX	XXX	12	20	50	55	4	0.07
2,1	XXX	XXX	12.5	20	55	55	4	0.07
2,2	XXX	XXX	13	20	55	55	4	0.07
2,3	XXX	XXX	14	20	55	55	4	0.09
3/32	XXX	–	14.5	–	55	–	4	0.09
2,4	XXX	XXX	14.5	20	55	55	4	0.09
2,5	XXX	XXX	15	20	55	55	4	0.09
2,6	XXX	XXX	15.5	20	55	55	4	0.09
2,7	XXX	XXX	16	20	55	55	4	0.11
2,8	XXX	XXX	17	20	55	55	4	0.11
2,9	XXX	XXX	17.5	20	55	55	4	0.11
3	XXX	XXX	20	20	62	62	6	0.11
3,1	XXX	XXX	20	20	62	62	6	0.11
1/8	XXX	–	20	–	62	–	6	0.11

Ø h7	12F 12 2501	12E 12 2310						
	HOLEX Pro Steel solid carbide drill, plain shank	Solid carbide high performance drill, plain shank						
	DIN 6535 HA		12 2501	12 2310	12 2501	12 2310		12 2501
mm or inch	TiAlN	TiN	mm	mm	mm	mm	mm	mm/ rev.
3,2	XXX	XXX	20	20	62	62	6	0.11
3,3	XXX	XXX	20	20	62	62	6	0.11
3,4	XXX	XXX	20	20	62	62	6	0.11
3,5	XXX	XXX	20	20	62	62	6	0.11
3,6	XXX	XXX	20	20	62	62	6	0.11
3,7	XXX	XXX	20	20	62	62	6	0.11
3,8	XXX	XXX	24	24	66	66	6	0.11
W/L-25	XXX	–	24	–	66	–	6	0.11
3,9	XXX	XXX	24	24	66	66	6	0.11
5/32	XXX	–	24	–	66	–	6	0.11
4	XXX	XXX	24	24	66	66	6	0.14
4,1	XXX	XXX	24	24	66	66	6	0.14
4,2	XXX	XXX	24	24	66	66	6	0.14
4,3	XXX	XXX	24	24	66	66	6	0.14
4,4	XXX	XXX	24	24	66	66	6	0.14
4,5	XXX	XXX	24	24	66	66	6	0.14
W/L-16	XXX	–	24	–	66	–	6	0.14
4,6	XXX	XXX	24	24	66	66	6	0.14
4,7	XXX	XXX	24	24	66	66	6	0.14
3/16	XXX	–	28	–	66	–	6	0.14
4,8	XXX	XXX	28	28	66	66	6	0.14
4,9	XXX	XXX	28	28	66	66	6	0.14
5	XXX	XXX	28	28	66	66	6	0.14
5,1	XXX	XXX	28	28	66	66	6	0.14
5,2	XXX	XXX	28	28	66	66	6	0.14

Ø h7	12F 12 2501	12E 12 2310							Ø h7	12F 12 2501	12E 12 2310						
	HOLEX Pro Steel solid carbide drill, plain shank	Solid carbide high performance drill, plain shank						< 900 N f		HOLEX Pro Steel solid carbide drill, plain shank	Solid carbide high performance drill, plain shank						< 900 N f
	DIN 6535 HA		12 2501	12 2310	12 2501	12 2310		12 2501		DIN 6535 HA		12 2501	12 2310	12 2501	12 2310		12 2501
mm or inch	TiAlN	TiN	mm	mm	mm	mm	mm	mm/ rev.	mm or inch	TiAlN	TiN	mm	mm	mm	mm	mm	mm/ rev.
5,3	XXX	XXX	28	28	66	66	6	0.14	10,5	XXX	XXX	55	55	102	102	12	0.22
5,4	XXX	XXX	28	28	66	66	6	0.14	10,6	XXX	–	55	–	102	–	12	0.22
5,5	XXX	XXX	28	28	66	66	6	0.14	10,7	XXX	–	55	–	102	–	12	0.22
7/32	XXX	–	28	–	66	–	6	0.14	10,8	XXX	XXX	55	55	102	102	12	0.22
5,6	XXX	XXX	28	28	66	66	6	0.14	10,9	XXX	–	55	–	102	–	12	0.22
5,7	XXX	XXX	28	28	66	66	6	0.14	11	XXX	XXX	55	55	102	102	12	0.22
5,8	XXX	XXX	28	28	66	66	6	0.14	11,1	XXX	–	55	–	102	–	12	0.22
5,9	XXX	XXX	28	28	66	66	6	0.14	7/16	XXX	–	55	–	102	–	12	0.22
6	XXX	XXX	28	28	66	66	6	0.14	11,2	XXX	XXX	55	55	102	102	12	0.22
6,1	XXX	XXX	34	34	79	79	8	0.18	11,3	XXX	–	55	–	102	–	12	0.22
W/L-C	XXX	–	34	–	79	–	8	0.18	11,4	XXX	–	55	–	102	–	12	0.22
6,15	(XXX)	–	34	–	79	–	8	0.18	11,5	XXX	XXX	55	55	102	102	12	0.22
6,2	XXX	XXX	34	34	79	79	8	0.18	11,6	XXX	–	55	–	102	–	12	0.22
6,3	XXX	XXX	34	34	79	79	8	0.18	11,7	XXX	–	55	–	102	–	12	0.22
1/4	XXX	–	34	–	79	–	8	0.18	11,8	XXX	XXX	55	55	102	102	12	0.22
6,35	XXX	–	34	–	79	–	8	0.18	11,9	XXX	–	55	–	102	–	12	0.22
6,4	XXX	XXX	34	34	79	79	8	0.18	12	XXX	XXX	55	55	102	102	12	0.22
6,5	XXX	XXX	34	34	79	79	8	0.18	12,2	XXX	XXX	60	60	107	107	14	0.26
6,6	XXX	XXX	34	34	79	79	8	0.18	12,5	XXX	XXX	60	60	107	107	14	0.26
6,7	XXX	XXX	34	34	79	79	8	0.18	1/2	XXX	–	60	–	107	–	14	0.26
6,8	XXX	XXX	34	34	79	79	8	0.18	12,7	XXX	–	60	–	107	–	14	0.26
6,9	XXX	XXX	34	34	79	79	8	0.18	12,8	XXX	XXX	60	60	107	107	14	0.26
7	XXX	XXX	34	34	79	79	8	0.18	13	XXX	XXX	60	60	107	107	14	0.26
7,1	XXX	XXX	41	41	79	79	8	0.18	13,2	XXX	–	60	–	107	–	14	0.26
9/32	XXX	–	41	–	79	–	8	0.18	13,5	XXX	XXX	60	60	107	107	14	0.26
7,2	XXX	XXX	41	41	79	79	8	0.18	13,8	XXX	XXX	60	60	107	107	14	0.26
7,3	XXX	–	41	–	79	–	8	0.18	14	XXX	XXX	60	60	107	107	14	0.26
7,4	XXX	XXX	41	41	79	79	8	0.18	14,2	XXX	XXX	65	65	115	115	16	0.26
7,5	XXX	XXX	41	41	79	79	8	0.18	9/16	XXX	–	65	–	115	–	16	0.26
7,6	XXX	XXX	41	41	79	79	8	0.18	14,5	XXX	XXX	65	65	115	115	16	0.26
7,7	XXX	XXX	41	41	79	79	8	0.18	14,8	XXX	XXX	65	65	115	115	16	0.26
7,8	XXX	XXX	41	41	79	79	8	0.18	15	XXX	XXX	65	65	115	115	16	0.26
7,9	XXX	XXX	41	41	79	79	8	0.18	19/32	XXX	–	65	–	115	–	16	0.26
5/16	XXX	–	41	–	79	–	8	0.18	15,1	XXX	XXX	65	65	115	115	16	0.26
8	XXX	XXX	41	41	79	79	8	0.18	15,2	XXX	XXX	65	65	115	115	16	0.26
8,1	XXX	XXX	47	47	89	89	10	0.2	15,5	XXX	XXX	65	65	115	115	16	0.26
8,2	XXX	XXX	47	47	89	89	10	0.2	15,8	XXX	XXX	65	65	115	115	16	0.26
8,3	XXX	XXX	47	47	89	89	10	0.2	5/8	XXX	–	65	–	115	–	16	0.26
8,4	XXX	XXX	47	47	89	89	10	0.2	16	XXX	XXX	65	65	115	115	16	0.26
8,5	XXX	XXX	47	47	89	89	10	0.2	16,2	XXX	–	73	–	123	–	18	0.28
8,6	XXX	XXX	47	47	89	89	10	0.2	16,5	XXX	XXX	73	73	123	123	18	0.28
8,7	XXX	XXX	47	47	89	89	10	0.2	21/32	XXX	–	73	–	123	–	18	0.28
11/32	XXX	–	47	–	89	–	10	0.2	16,8	XXX	–	73	–	123	–	18	0.28
8,8	XXX	XXX	47	47	89	89	10	0.2	17	XXX	XXX	73	73	123	123	18	0.28
8,9	XXX	XXX	47	47	89	89	10	0.2	17,2	XXX	–	73	–	123	–	18	0.28
9	XXX	XXX	47	47	89	89	10	0.2	17,3	XXX	–	73	–	123	–	18	0.28
9,1	XXX	XXX	47	47	89	89	10	0.22	11/16	XXX	–	73	–	123	–	18	0.28
9,2	XXX	XXX	47	47	89	89	10	0.22	17,5	XXX	XXX	73	73	123	123	18	0.28
9,3	XXX	XXX	47	47	89	89	10	0.22	17,7	XXX	XXX	73	73	123	123	18	0.28
9,4	XXX	XXX	47	47	89	89	10	0.22	17,8	XXX	–	73	–	123	–	18	0.28
9,5	XXX	XXX	47	47	89	89	10	0.22	18	XXX	XXX	73	73	123	123	18	0.28
3/8	XXX	–	47	–	89	–	10	0.22	18,2	XXX	–	79	–	131	–	20	0.28
9,6	XXX	XXX	47	47	89	89	10	0.22	18,5	XXX	XXX	79	79	131	131	20	0.28
9,7	XXX	XXX	47	47	89	89	10	0.22	18,8	XXX	–	79	–	131	–	20	0.28
9,8	XXX	XXX	47	47	89	89	10	0.22	19	XXX	XXX	79	79	131	131	20	0.28
9,9	XXX	XXX	47	47	89	89	10	0.22	3/4	XXX	–	79	–	131	–	20	0.28
10	XXX	XXX	47	47	89	89	10	0.22	19,05	XXX	–	79	–	131	–	20	0.28
10,1	XXX	–	55	–	102	–	12	0.22	19,2	XXX	–	79	–	131	–	20	0.28
10,2	XXX	XXX	55	55	102	102	12	0.22	19,3	XXX	–	79	–	131	–	20	0.28
10,3	XXX	XXX	55	55	102	102	12	0.22	19,5	XXX	–	79	–	131	–	20	0.28
13/32	XXX	–	55	–	102	–	12	0.22	19,8	XXX	–	79	–	131	–	20	0.28
10,4	XXX	–	55	–	102	–	12	0.22	20	XXX	XXX	79	79	131	131	20	0.28

Solid carbide | DIN 6537 K | 4×D | h7 | 2 | 140° | h6 DIN 6535 HA | 25 bar

HOLEX Solid carbide high performance drill

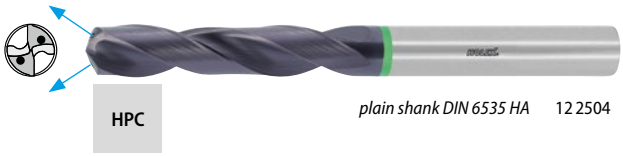
12 2504 – **HOLEX Pro Steel:**
Straight major cutting edges and a **special flute profile** ensure good chip evacuation. The robust cutter geometry ensures high-performance drilling with good process reliability. A wide range of applications in steel materials thanks to a combination of tough ultra-fine grain carbide and extremely wear-resistant coating.
Up to Ø 1.9 with 4 facets, from Ø 2 with relieved cone.

Recommendation: Maximum drilling depth:
Flute length (see table) less 1.5×nominal Ø.

Note:

12 2340 – **NEW GENERATION AVAILABLE!**
Recommended successor product is No. 122504.

12 2504 – Version HB and HE supplied at the same price as HA.
Form **HB:** state **No. 122507**.
Form **HE:** state **No. 122508**.



plain shank DIN 6535 HA 12 2504

Weldon shank DIN 6535 HB 12 2507

Whistle-Notch shank DIN 6535 HE 12 2508

Plain shank DIN 6535 HA 12 2340

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG	GGG	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	M	M	S	K	K						
12 2340		240		110	90	80	65	35					35	30	30			●		●	●		○
12 2504	250	200	160	125	115	95	90	65					35	30		100	65	●		●	●		

Ø h7	12F 12 2504	12E 12 2340						
	HOLEX Pro Steel solid carbide drill plain shank	Solid carbide high performance drill, plain shank						
	DIN 6535 HA		12 2504	12 2340	12 2504	12 2340		12 2504
mm or inch	TiAlN	TiN	mm	mm	mm	mm	mm	mm/rev.
1	XXX	XXX	6	7	45	45	4	0.05
1,1	XXX	–	6.5	–	45	–	4	0.05
1,2	XXX	XXX	7	7	45	45	4	0.05
1,3	XXX	XXX	8	7	45	45	4	0.05
1,4	XXX	XXX	8.5	7	45	45	4	0.05
1,5	XXX	XXX	9	14	50	55	4	0.05
1/16	XXX	–	9.5	–	50	–	4	0.05
1,6	XXX	XXX	9.5	14	50	55	4	0.05
1,7	XXX	XXX	10	14	50	55	4	0.07
1,8	XXX	XXX	11	14	50	55	4	0.07
1,9	XXX	XXX	11.5	14	50	55	4	0.07
2	XXX	XXX	12	20	50	55	4	0.07
2,1	XXX	XXX	12.5	20	55	55	4	0.07
2,2	XXX	XXX	13	20	55	55	4	0.07
2,3	XXX	XXX	14	20	55	55	4	0.09
3/32	XXX	–	14.5	–	55	–	4	0.09
2,4	XXX	XXX	14.5	20	55	55	4	0.09
2,5	XXX	XXX	15	20	55	55	4	0.09
2,6	XXX	XXX	15.5	20	55	55	4	0.09
2,7	XXX	XXX	16	20	55	55	4	0.09
2,8	XXX	XXX	17	20	55	55	4	0.11
2,9	XXX	XXX	17.5	20	55	55	4	0.11
3	XXX	XXX	20	20	62	62	6	0.11
3,1	XXX	XXX	20	20	62	62	6	0.11

Ø h7	12F 12 2504	12E 12 2340						
	HOLEX Pro Steel solid carbide drill plain shank	Solid carbide high performance drill, plain shank						
	DIN 6535 HA		12 2504	12 2340	12 2504	12 2340		12 2504
mm or inch	TiAlN	TiN	mm	mm	mm	mm	mm	mm/rev.
1/8	XXX	–	20	–	62	–	6	0.11
3,2	XXX	XXX	20	20	62	62	6	0.11
3,3	XXX	XXX	20	20	62	62	6	0.11
3,4	XXX	XXX	20	20	62	62	6	0.11
3,5	XXX	XXX	20	20	62	62	6	0.11
3,6	XXX	XXX	20	20	62	62	6	0.11
3,7	XXX	XXX	20	20	62	62	6	0.11
3,8	XXX	XXX	24	24	66	66	6	0.11
W/L-25	XXX	–	24	–	66	–	6	0.11
3,9	XXX	XXX	24	24	66	66	6	0.11
5/32	XXX	–	24	–	66	–	6	0.11
4	XXX	XXX	24	24	66	66	6	0.14
4,1	XXX	XXX	24	24	66	66	6	0.14
4,2	XXX	XXX	24	24	66	66	6	0.14
4,3	XXX	XXX	24	24	66	66	6	0.14
4,4	XXX	XXX	24	24	66	66	6	0.14
4,5	XXX	XXX	24	24	66	66	6	0.14
W/L-16	XXX	–	24	–	66	–	6	0.14
4,6	XXX	XXX	24	24	66	66	6	0.14
4,7	XXX	XXX	24	24	66	66	6	0.14
3/16	XXX	–	28	–	66	–	6	0.14
4,8	XXX	XXX	28	28	66	66	6	0.14
4,9	XXX	XXX	28	28	66	66	6	0.14
5	XXX	XXX	28	28	66	66	6	0.14

Ø h7	12F 12 2504	12E 12 2340						< 900 N
	HOLEX Pro Steel solid carbide drill plain shank	Solid carbide high performance drill, plain shank			L_{tot}			f
	DIN 6535 HA		12 2504	12 2340	12 2504	12 2340		12 2504
mm or inch	TiAlN	TiN	mm	mm	mm	mm	mm	mm/rev.
5,1	XXX	XXX	28	28	66	66	6	0.14
5,2	XXX	XXX	28	28	66	66	6	0.14
5,3	XXX	XXX	28	28	66	66	6	0.14
5,4	XXX	XXX	28	28	66	66	6	0.14
5,5	XXX	XXX	28	28	66	66	6	0.14
7/32	XXX	–	28	–	66	–	6	0.14
5,6	XXX	XXX	28	28	66	66	6	0.14
5,7	XXX	XXX	28	28	66	66	6	0.14
5,8	XXX	XXX	28	28	66	66	6	0.14
5,9	XXX	XXX	28	28	66	66	6	0.14
6	XXX	XXX	28	28	66	66	6	0.14
6,1	XXX	XXX	34	34	79	79	8	0.18
W/L-C	XXX	–	34	–	79	–	8	0.18
6,15	XXX	–	34	–	79	–	8	0.18
6,2	XXX	XXX	34	34	79	79	8	0.18
6,3	XXX	XXX	34	34	79	79	8	0.18
1/4	XXX	–	34	–	79	–	8	0.18
6,35	XXX	–	34	–	79	–	8	0.18
6,4	XXX	XXX	34	34	79	79	8	0.18
6,5	XXX	XXX	34	34	79	79	8	0.18
6,6	XXX	XXX	34	34	79	79	8	0.18
6,7	XXX	–	34	–	79	–	8	0.18
6,8	XXX	XXX	34	34	79	79	8	0.18
6,9	XXX	XXX	34	34	79	79	8	0.18
7	XXX	XXX	34	34	79	79	8	0.18
7,1	XXX	XXX	41	41	79	79	8	0.18
9/32	XXX	–	41	–	79	–	8	0.18
7,2	XXX	XXX	41	41	79	79	8	0.18
7,3	XXX	XXX	41	41	79	79	8	0.18
7,4	XXX	XXX	41	41	79	79	8	0.18
7,5	XXX	XXX	41	41	79	79	8	0.18
7,6	XXX	XXX	41	41	79	79	8	0.18
7,7	XXX	XXX	41	41	79	79	8	0.18
7,8	XXX	XXX	41	41	79	79	8	0.18
7,9	XXX	XXX	41	41	79	79	8	0.18
5/16	XXX	–	41	–	79	–	8	0.18
8	XXX	XXX	41	41	79	79	8	0.18
8,1	XXX	XXX	47	47	89	89	10	0.2
8,2	XXX	XXX	47	47	89	89	10	0.2
8,3	XXX	XXX	47	47	89	89	10	0.2
8,4	XXX	XXX	47	47	89	89	10	0.2
8,5	XXX	XXX	47	47	89	89	10	0.2
8,6	XXX	XXX	47	47	89	89	10	0.2
8,7	XXX	XXX	47	47	89	89	10	0.2
11/32	XXX	–	47	–	89	–	10	0.2
8,8	XXX	XXX	47	47	89	89	10	0.2
8,9	XXX	XXX	47	47	89	89	10	0.2
9	XXX	XXX	47	47	89	89	10	0.2
9,1	XXX	XXX	47	47	89	89	10	0.22
9,2	XXX	XXX	47	47	89	89	10	0.22
9,3	XXX	XXX	47	47	89	89	10	0.22
9,4	XXX	XXX	47	47	89	89	10	0.22
9,5	XXX	XXX	47	47	89	89	10	0.22
3/8	XXX	–	47	–	89	–	10	0.22
9,6	XXX	XXX	47	47	89	89	10	0.22
9,7	XXX	XXX	47	47	89	89	10	0.22
9,8	XXX	XXX	47	47	89	89	10	0.22
9,9	XXX	XXX	47	47	89	89	10	0.22
10	XXX	XXX	47	47	89	89	10	0.22
10,1	XXX	–	55	–	102	–	12	0.22
10,2	XXX	XXX	55	55	102	102	12	0.22
10,3	XXX	XXX	55	55	102	102	12	0.22
13/32	XXX	–	55	–	102	–	12	0.22

Ø h7	12F 12 2504	12E 12 2340						< 900 N
	HOLEX Pro Steel solid carbide drill plain shank	Solid carbide high performance drill, plain shank			L_{tot}			f
	DIN 6535 HA		12 2504	12 2340	12 2504	12 2340		12 2504
mm or inch	TiAlN	TiN	mm	mm	mm	mm	mm	mm/rev.
10,4	XXX	–	55	–	102	–	12	0.22
10,5	XXX	XXX	55	55	102	102	12	0.22
10,6	XXX	–	55	–	102	–	12	0.22
10,7	XXX	–	55	–	102	–	12	0.22
10,8	XXX	XXX	55	55	102	102	12	0.22
10,9	XXX	–	55	–	102	–	12	0.22
11	XXX	XXX	55	55	102	102	12	0.22
11,1	XXX	–	55	–	102	–	12	0.22
7/16	XXX	–	55	–	102	–	12	0.22
11,2	XXX	XXX	55	55	102	102	12	0.22
11,3	XXX	–	55	–	102	–	12	0.22
11,4	XXX	–	55	–	102	–	12	0.22
11,5	XXX	XXX	55	55	102	102	12	0.22
11,6	XXX	–	55	–	102	–	12	0.22
11,7	XXX	–	55	–	102	–	12	0.22
11,8	XXX	XXX	55	55	102	102	12	0.22
11,9	XXX	–	55	–	102	–	12	0.22
12	XXX	XXX	55	55	102	102	12	0.22
12,2	XXX	XXX	60	60	107	107	14	0.26
12,5	XXX	XXX	60	60	107	107	14	0.26
1/2	XXX	–	60	–	107	–	14	0.26
12,7	XXX	–	60	–	107	–	14	0.26
12,8	XXX	XXX	60	60	107	107	14	0.26
13	XXX	XXX	60	60	107	107	14	0.26
13,2	XXX	–	60	–	107	–	14	0.26
13,5	XXX	XXX	60	60	107	107	14	0.26
13,8	XXX	XXX	60	60	107	107	14	0.26
14	XXX	XXX	60	60	107	107	14	0.26
14,2	XXX	XXX	65	65	115	115	16	0.26
9/16	XXX	–	65	–	115	–	16	0.26
14,5	XXX	XXX	65	65	115	115	16	0.26
14,8	XXX	XXX	65	65	115	115	16	0.26
15	XXX	XXX	65	65	115	115	16	0.26
19/32	XXX	–	65	–	115	–	16	0.26
15,1	XXX	XXX	65	65	115	115	16	0.26
15,2	XXX	XXX	65	65	115	115	16	0.26
15,5	XXX	XXX	65	65	115	115	16	0.26
15,8	XXX	XXX	65	65	115	115	16	0.26
5/8	XXX	–	65	–	115	–	16	0.26
16	XXX	XXX	65	65	115	115	16	0.26
16,2	XXX	–	73	–	123	–	18	0.28
16,5	XXX	XXX	73	73	123	123	18	0.28
21/32	XXX	–	73	–	123	–	18	0.28
16,8	XXX	–	73	–	123	–	18	0.28
17	XXX	XXX	73	73	123	123	18	0.28
17,2	XXX	–	73	–	123	–	18	0.28
17,3	XXX	–	73	–	123	–	18	0.28
11/16	XXX	–	73	–	123	–	18	0.28
17,5	XXX	XXX	73	73	123	123	18	0.28
17,7	XXX	XXX	73	73	123	123	18	0.28
17,8	XXX	–	73	–	123	–	18	0.28
18	XXX	XXX	73	73	123	123	18	0.28
18,2	XXX	–	79	–	131	–	20	0.28
18,5	XXX	XXX	79	79	131	131	20	0.28
18,8	XXX	–	79	–	131	–	20	0.28
19	XXX	XXX	79	79	131	131	20	0.28
3/4	XXX	–	79	–	131	–	20	0.28
19,05	XXX	–	79	–	131	–	20	0.28
19,2	XXX	–	79	–	131	–	20	0.28
19,3	XXX	–	79	–	131	–	20	0.28
19,5	XXX	–	79	–	131	–	20	0.28
19,8	XXX	–	79	–	131	–	20	0.28
20	XXX	–	79	–	131	–	20	0.28

Solid carbide | Standard | 3×D | m7 | 2 | 180° | h6 DIN 6535 HA | 25 bar

Garant Solid carbide drill 180°

Special point geometry for generating **180° flat-bottomed holes.** Low radial forces even when spot drilling on faces with up to 45° slope. Flute geometry for optimum chip evacuation. With 4 guide chamfers to stabilise the drill in the hole.

Advantage: **The 180° point angle** permits drilling and counterboring in a single operation.

Recommendation: **Maximum drilling depth:**
clamping slot length (see table) less 1.5×nominal Ø.When using the solid carbide 180° drill it is absolutely essential for process reliability:

- **when spot drilling on flat surfaces** to drill a pilot hole 1×D using pilot drill No. 122736**.**
- **when spot drilling on sloping surfaces** up to 15° : reduce the feed rate f **to 50 %,** up to 30°: reduce the feed rate f **to 40 %** and up to 45°: reduce the feed rate f **to 25 %** of the stated value. **After spot drilling**, the **normal feed rate value** can be used.

Note:
Form HB and HE supplied at the same price as HA.
Form **HB:** order with **No. 122506 + 129100HB** .
Form **HE:** order with **No. 122506 + 129100HE.**
180° solid carbide drills for machining aluminium available on request.
Not suitable for generating counterbores for socket-head screws to DIN974-1.

Plain shank DIN 6535 HA 122506

Weldon shank DIN 6535 HB 122506 + 129100HB

Whistle-Notch shank DIN 6535 HE 122506 + 129100HE

With cutting edge chamfer (= 5% of the nominal Ø)

Pilot drill

122736

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	K						
122506				85	75	60	45							45	40		90	●		●	●		●

Ø m7	122506 Solid carbide drill plain shank DIN 6535 HA 180° TiAlN	L_{tot}	< 900 N f
mm		mm	mm	mm	mm/rev.
3	XXX	20	62	6	0.05
3,1	(XXX)	20	62	6	0.05
3,2	XXX	20	62	6	0.05
3,3	(XXX)	20	62	6	0.05
3,4	(XXX)	20	62	6	0.05
3,5	XXX	20	62	6	0.05
3,6	(XXX)	20	62	6	0.05
3,7	(XXX)	20	62	6	0.05
3,8	(XXX)	24	66	6	0.05
3,9	(XXX)	24	66	6	0.05
4	XXX	24	66	6	0.08
4,1	XXX	24	66	6	0.08
4,2	XXX	24	66	6	0.08
4,3	XXX	24	66	6	0.08
4,4	(XXX)	24	66	6	0.08
4,5	XXX	24	66	6	0.08
4,6	(XXX)	24	66	6	0.08
4,65	(XXX)	24	66	6	0.08
4,7	(XXX)	24	66	6	0.08
4,8	XXX	28	66	6	0.08
4,9	(XXX)	28	66	6	0.08
5	XXX	28	66	6	0.12
5,1	(XXX)	28	66	6	0.12
5,2	(XXX)	28	66	6	0.12
5,3	(XXX)	28	66	6	0.12
5,4	XXX	28	66	6	0.12
5,5	XXX	28	66	6	0.12
5,55	(XXX)	28	66	6	0.12
5,6	(XXX)	28	66	6	0.12
5,7	(XXX)	28	66	6	0.12
5,8	XXX	28	66	6	0.12
5,9	(XXX)	28	66	6	0.12
6	XXX	28	66	6	0.12
6,1	(XXX)	34	79	8	0.12
6,2	XXX	34	79	8	0.12
6,3	(XXX)	34	79	8	0.12
6,4	(XXX)	34	79	8	0.12
6,5	XXX	34	79	8	0.12
6,6	(XXX)	34	79	8	0.12

Ø m7	122506 Solid carbide drill plain shank DIN 6535 HA 180° TiAlN	L_{tot}	< 900 N f
mm		mm	mm	mm	mm/rev.
6,7	(XXX)	34	79	8	0.12
6,8	XXX	34	79	8	0.12
6,9	(XXX)	34	79	8	0.12
7	XXX	34	79	8	0.12
7,1	(XXX)	41	79	8	0.12
7,2	(XXX)	41	79	8	0.12
7,3	(XXX)	41	79	8	0.12
7,4	(XXX)	41	79	8	0.12
7,5	XXX	41	79	8	0.12
7,6	(XXX)	41	79	8	0.12
7,7	(XXX)	41	79	8	0.12
7,8	XXX	41	79	8	0.12
7,9	(XXX)	41	79	8	0.12
8	XXX	41	79	8	0.12
8,1	(XXX)	47	89	10	0.15
8,2	(XXX)	47	89	10	0.15
8,3	XXX	47	89	10	0.15
8,4	(XXX)	47	89	10	0.15
8,5	XXX	47	89	10	0.15
8,6	(XXX)	47	89	10	0.15
8,7	(XXX)	47	89	10	0.15
8,8	(XXX)	47	89	10	0.15
8,9	(XXX)	47	89	10	0.15
9	XXX	47	89	10	0.15
9,1	(XXX)	47	89	10	0.15
9,2	(XXX)	47	89	10	0.15
9,3	(XXX)	47	89	10	0.15
9,4	(XXX)	47	89	10	0.15
9,5	XXX	47	89	10	0.15
9,6	(XXX)	47	89	10	0.15
9,7	(XXX)	47	89	10	0.15
9,8	XXX	47	89	10	0.15
9,9	(XXX)	47	89	10	0.15
10	XXX	47	89	10	0.15
10,1	(XXX)	53	100	12	0.15
10,2	XXX	53	100	12	0.15
10,3	(XXX)	53	100	12	0.15
10,4	(XXX)	53	100	12	0.15
10,5	XXX	53	100	12	0.15

Ø m7	122506 Solid carbide drill plain shank DIN 6535 HA 180° TiAlN	L_{tot}	< 900 N f
mm		mm	mm	mm	mm/rev.
10,6	(XXX)	53	100	12	0.15
10,7	(XXX)	53	100	12	0.15
10,8	(XXX)	53	100	12	0.15
10,9	(XXX)	53	100	12	0.15
11	XXX	53	100	12	0.15
11,1	(XXX)	53	100	12	0.15
11,2	(XXX)	53	100	12	0.15
11,3	(XXX)	53	100	12	0.15
11,4	(XXX)	53	100	12	0.15
11,5	XXX	53	100	12	0.15
11,6	(XXX)	53	100	12	0.15
11,7	(XXX)	53	100	12	0.15
11,8	XXX	53	100	12	0.15
11,9	(XXX)	53	100	12	0.15
12	XXX	53	100	12	0.15
12,5	XXX	58	105	14	0.16
12,8	(XXX)	58	105	14	0.16
13	XXX	58	105	14	0.16
13,5	(XXX)	58	105	14	0.16
13,8	(XXX)	58	105	14	0.16
14	XXX	58	105	14	0.16
14,5	(XXX)	63	113	16	0.16
14,8	(XXX)	63	113	16	0.16
15	XXX	63	113	16	0.16
15,5	(XXX)	63	113	16	0.16
15,8	(XXX)	63	113	16	0.16
16	XXX	63	113	16	0.16
16,5	(XXX)	71	121	18	0.2
16,8	(XXX)	71	121	18	0.2
17	XXX	71	121	18	0.2
17,5	(XXX)	71	121	18	0.2
17,8	(XXX)	71	121	18	0.2
18	XXX	71	121	18	0.2
18,5	(XXX)	77	129	20	0.2
18,8	(XXX)	77	129	20	0.2
19	(XXX)	77	129	20	0.2
19,5	(XXX)	77	129	20	0.2
19,8	(XXX)	77	129	20	0.2
20	XXX	77	129	20	0.23

Solid carbide | Standard | 5×D | m7 | 90° | h6 DIN 6535 HA | 2

Garant

Solid carbide high performance special drill for GRP / CRP, non-standard sizes

With the latest generation of **crystalline diamond coating sp³**, for process reliability in machining **fibre-reinforced composites, CRP, GRP, and graphite. With 90° point angle** and special geometry to**avoid delamination.**

12 2512 – **With guide chamfer** for materials with **multi-directional** fibre orientation.

12 2522 – **With cutting guide chamfer** to avoid delamination, projecting fibres, and burr formation on materials with **uni-directional** fibre orientation.

12 2532 – Under optimum conditions of use, the **double flute face** can generate high precision holes (**roundness < 15 µm** to **base tolerance IT 7**). Low heat generation due to **internal cooling** permits **higher speeds and feeds.**

Recommendation: Maximum drilling depth:
Flute length (see table) less 1.5×nominal ∅.

Note:	Available in **1/100 sizes** and according to the table.

12 2512

12 2522

12 2532

25 bar

Suitable for/ v_c [m/min]	PMMA acrylic	PE-HD	PA 66	PEEK	PF 31	AFRP aramid	PVDF GF20	POM GF25	PA 66 GF30	PEEK GF30	PTFE CF25	PEEK CF30	Hybrid	Honey-comb sandwich	MMC	GRP	GRP CRP	Graphite					
ISO code	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N					
12 2512/2522	150	140	130	120	100		**110**	**100**	**90**	**80**	**90**	**80**	●				**100**	**340**		○		●	●
12 2532	150	140	130	120	100		**135**	**125**	**110**	**100**	**110**	**100**	●				**125**	**340**		●	●		●

∅ m7	12 2512	12 2522	12 2532	∅ range (1/100 size)				
	Solid carbide drill plain shank		Solid carbide drill IC plain shank			L_{tot}		GRP CRP f
	multi-directional DIN 6535 HA	**unidirectional DIN 6535 HA**	**unidirectional DIN 6535 HA**					
mm	**Diamond**	**Diamond**	**Diamond**	mm	mm	mm	mm	mm/rev.
0,9	(XXX)	–	–	–	6.5	45	4	0.01
1	(XXX)	–	–	–	7	45	4	0.02
1,1	(XXX)	–	–	1.01 – 1.1	7.5	45	4	0.02
1,2	(XXX)	–	–	1.11 – 1.2	8.5	45	4	0.02
1,3	(XXX)	–	–	1.21 – 1.3	9	45	4	0.02
1,4	(XXX)	–	–	1.31 – 1.49	10	45	4	0.02
1,5	(XXX)	–	–	–	10.5	50	4	0.02
1,6	(XXX)	–	–	1.51 – 1.6	11	50	4	0.03
1,7	(XXX)	–	–	1.61 – 1.7	12	50	4	0.03
1,8	(XXX)	–	–	1.71 – 1.8	12.5	50	4	0.03
1,9	(XXX)	–	–	1.81 – 1.99	13.5	50	4	0.03
2	(XXX)	–	–	–	14	50	4	0.04
2,1	(XXX)	–	–	2.01 – 2.1	14.5	55	4	0.04
2,2	(XXX)	–	–	2.11 – 2.2	15.5	55	4	0.04
2,3	(XXX)	–	–	2.21 – 2.3	16	55	4	0.04
2,4	(XXX)	–	–	2.31 – 2.49	17	55	4	0.04
2,5	XXX	(XXX)	–	–	24	66	6	0.04
2,7	(XXX)	(XXX)	–	2.51 – 2.99	24	66	6	0.04
3	(XXX)	(XXX)	–	–	28	66	6	0.06
3,5	(XXX)	(XXX)	–	3.01 – 3.99	28	66	6	0.06
4	(XXX)	(XXX)	–	–	36	74	6	0.06
4,5	(XXX)	(XXX)	–	4.01 – 4.99	36	74	6	0.06
5	(XXX)	(XXX)	–	–	44	82	6	0.11
5,5	(XXX)	(XXX)	–	5.01 – 5.99	44	82	6	0.11
6	(XXX)	(XXX)	(XXX)	–	44	82	6	0.11
7	(XXX)	(XXX)	(XXX)	6.01 – 7.99	53	91	8	0.11
8	(XXX)	(XXX)	(XXX)	–	53	91	8	0.15
8,5	(XXX)	(XXX)	(XXX)	8.01 – 8.99	61	103	10	0.15
9	(XXX)	(XXX)	(XXX)	–	61	103	10	0.15
9,5	(XXX)	(XXX)	(XXX)	9.01 – 9.99	61	103	10	0.15
10	(XXX)	(XXX)	(XXX)	–	61	103	10	0.19
10,5	(XXX)	(XXX)	(XXX)	10.01 – 10.99	71	118	12	0.19
11	XXX	(XXX)	(XXX)	–	71	118	12	0.19
11,5	(XXX)	(XXX)	(XXX)	11.01 – 11.99	71	118	12	0.19
12	(XXX)	(XXX)	(XXX)	–	71	118	12	0.21

Solid carbide | DIN 6537 | 6×D | Type FS | h7 | 2 | 140° | h6 DIN 6535 HA

Garant Solid carbide NC high performance drill

Particularly strong due to strengthened core and **special profile.** Special point geometry. **High concentricity** and **long tool life. High bore quality.**

Recommendation: Maximum drilling depth:
Flute length (see table) less 1.5×nominal ∅.

Note:	Form HB and HE supplied at the same price as HA. Form **HB:** order with **No. 122545**. Form **HE:** order with **No. 122540 + 129100HE**.

plain shank DIN 6535 HA 12 2540

Weldon shank DIN 6535 HB 12 2545

Whistle-Notch shank DIN 6535 HE 12 2540 + 129100HE

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	CuZn	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	M	M	S	K	N						
12 2540	190	170	140	90	85	75	65	40					40	30	25	70	160	●		●		●	

∅ h7	11E	12 2540					< 750 N
		Solid carbide NC high performance drill FS, plain shank DIN 6535 HA		L_{tot}			f
mm		TiAlN	mm	mm	mm	mm/rev.
2		XXX	21	57	4	0.1
2,1		XXX	21	57	4	0.1
2,2		XXX	21	57	4	0.1
2,3		XXX	21	57	4	0.1
2,4		XXX	21	57	4	0.1
2,5		XXX	21	57	4	0.1
2,6		XXX	21	57	4	0.1
2,7		XXX	21	57	4	0.1
2,8		XXX	21	57	4	0.1
2,9		XXX	21	57	4	0.1
3		XXX	28	66	6	0.14
3,1		XXX	28	66	6	0.14
3,2		XXX	28	66	6	0.14
3,3		XXX	28	66	6	0.14
3,4		XXX	28	66	6	0.14
3,5		XXX	28	66	6	0.14
3,6		XXX	28	66	6	0.14
3,7		XXX	28	66	6	0.14
3,8		XXX	28	66	6	0.14
3,9		XXX	28	66	6	0.14
4		XXX	28	66	6	0.14
4,1		XXX	44	82	6	0.14
4,2		XXX	44	82	6	0.14
4,3		XXX	44	82	6	0.14
4,4		XXX	44	82	6	0.14
4,5		XXX	44	82	6	0.14
4,6		XXX	44	82	6	0.14
4,7		XXX	44	82	6	0.14
4,8		XXX	44	82	6	0.14
4,9		XXX	44	82	6	0.14
5		XXX	44	82	6	0.14
5,1		XXX	44	82	6	0.14
5,2		XXX	44	82	6	0.14
5,3		XXX	44	82	6	0.14
5,4		XXX	44	82	6	0.14
5,5		XXX	44	82	6	0.14
5,6		XXX	44	82	6	0.14
5,7		XXX	44	82	6	0.14
5,8		XXX	44	82	6	0.14
5,9		XXX	44	82	6	0.14
6		XXX	44	82	6	0.2
6,1		XXX	53	91	8	0.2
6,2		XXX	53	91	8	0.2
6,3		XXX	53	91	8	0.2
6,4		XXX	53	91	8	0.2
6,5		XXX	53	91	8	0.2

∅ h7	11E	12 2540					< 750 N
		Solid carbide NC high performance drill FS, plain shank DIN 6535 HA		L_{tot}			f
mm		TiAlN	mm	mm	mm	mm/rev.
6,6		XXX	53	91	8	0.2
6,7		XXX	53	91	8	0.2
6,8		XXX	53	91	8	0.2
6,9		XXX	53	91	8	0.2
7		XXX	53	91	8	0.2
7,2		XXX	53	91	8	0.2
7,4		XXX	53	91	8	0.2
7,5		XXX	53	91	8	0.2
7,6		XXX	53	91	8	0.2
7,8		XXX	53	91	8	0.2
7,9		XXX	53	91	8	0.2
8		XXX	53	91	8	0.2
8,1		XXX	61	103	10	0.2
8,2		XXX	61	103	10	0.2
8,4		XXX	61	103	10	0.2
8,5		XXX	61	103	10	0.2
8,6		XXX	61	103	10	0.2
8,7		XXX	61	103	10	0.2
8,8		XXX	61	103	10	0.2
9		XXX	61	103	10	0.27
9,1		XXX	61	103	10	0.27
9,3		XXX	61	103	10	0.27
9,5		XXX	61	103	10	0.27
9,6		XXX	61	103	10	0.27
9,8		XXX	61	103	10	0.27
10		XXX	61	103	10	0.27
10,2		XXX	71	118	12	0.27
10,5		XXX	71	118	12	0.27
10,8		XXX	71	118	12	0.27
11		XXX	71	118	12	0.27
11,2		XXX	71	118	12	0.27
11,5		XXX	71	118	12	0.27
11,8		XXX	71	118	12	0.27
12		XXX	71	118	12	0.35
12,2		XXX	77	124	14	0.35
12,5		XXX	77	124	14	0.35
13		XXX	77	124	14	0.35
13,5		XXX	77	124	14	0.35
14		XXX	77	124	14	0.35
14,2		XXX	83	133	16	0.35
14,5		XXX	83	133	16	0.35
15		XXX	83	133	16	0.35
15,2		XXX	83	133	16	0.35
15,8		XXX	83	133	16	0.35
16		XXX	83	133	16	0.45

Solid carbide	DIN 6537	6×D	Type W	h7	2	135°	h6 DIN 6535 HA	25 bar	HPC

Garant Solid carbide HPC drill

DLC coating sp² of the latest generation with **low coefficient of friction** results in **outstanding chip clearance.** For **high-performance milling** of **aluminium materials**. **High alignment accuracy** and **roundness of the hole,** thanks to **6 guide chamfers**.
Size 1 - 1.5 with 4 guide chamfers.

Recommendation: Maximum drilling depth:
flute length (see table) less 1.5×nominal ∅.

Note:
Form HB and HE supplied at the same price as HA.
Form **HB:** order with **No. 122603**.
Form **HE:** order with **No. 122602 + 129100HE**.

Plain shank DIN 6535 HA 12 2602

Weldon shank DIN 6535 HB 12 2603

Whistle-Notch shank DIN 6535 HE 12 2602 + 12 9100HE

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	PMMA acrylic	PE-HD	PA 66	PEEK	PF 31	AFRP aramid	PVDF GF20	POM GF25	PA 66 GF30	PEEK GF30	PTFE CF25	Cu	CuZn	GRP	CRP
ISO code	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
12 2602	360	400	350	150			120			90		80	70	80	160	200	80	80

∅ h7	12 2602 Solid carbide HPC drill, plain shank DIN 6535 HA				Alu
			L_{tot}		f
mm	DLC	mm	mm	mm	mm/rev.
1	XXX	8	55	4	0.1
1,1	XXX	12	55	4	0.15
1,2	XXX	12	55	4	0.15
1,25	XXX	12	55	4	0.15
1,3	XXX	12	55	4	0.15
1,4	XXX	12	55	4	0.15
1,45	XXX	12	55	4	0.15
1,5	XXX	12	55	4	0.15
1,6	XXX	16	55	4	0.2
1,7	XXX	16	55	4	0.2
1,8	XXX	16	55	4	0.2
1,85	XXX	16	55	4	0.2
1,9	XXX	16	55	4	0.2
2	XXX	21	57	4	0.2
2,05	XXX	21	57	4	0.22
2,1	XXX	21	57	4	0.22
2,2	XXX	21	57	4	0.22
2,3	XXX	21	57	4	0.22
2,4	XXX	21	57	4	0.22
2,5	XXX	21	57	4	0.22
2,6	XXX	21	57	4	0.22
2,7	XXX	21	57	4	0.22
2,8	XXX	21	57	4	0.22
2,9	XXX	21	57	4	0.22
3	XXX	28	66	6	0.22
3,1	XXX	28	66	6	0.35
3,2	XXX	28	66	6	0.35
3,25	XXX	28	66	6	0.35
3,3	XXX	28	66	6	0.35
3,4	XXX	28	66	6	0.35
3,5	XXX	28	66	6	0.35
3,6	XXX	28	66	6	0.35
3,7	XXX	28	66	6	0.35
3,8	XXX	36	74	6	0.35
3,9	XXX	36	74	6	0.35
4	XXX	36	74	6	0.35
4,1	XXX	36	74	6	0.35
4,2	XXX	36	74	6	0.35
4,3	XXX	36	74	6	0.35
4,4	XXX	36	74	6	0.35
4,5	XXX	36	74	6	0.35
4,6	XXX	36	74	6	0.35
4,65	XXX	36	74	6	0.35
4,7	XXX	36	74	6	0.35
4,8	XXX	44	82	6	0.35
4,9	XXX	44	82	6	0.35

∅ h7	12 2602 Solid carbide HPC drill, plain shank DIN 6535 HA				Alu
			L_{tot}		f
mm	DLC	mm	mm	mm	mm/rev.
5	XXX	44	82	6	0.35
5,1	XXX	44	82	6	0.45
5,2	XXX	44	82	6	0.45
5,3	XXX	44	82	6	0.45
5,4	XXX	44	82	6	0.45
5,5	XXX	44	82	6	0.45
5,55	XXX	44	82	6	0.45
5,6	XXX	44	82	6	0.45
5,7	XXX	44	82	6	0.45
5,8	XXX	44	82	6	0.45
5,9	XXX	44	82	6	0.45
6	XXX	44	82	6	0.45
6,1	XXX	53	91	8	0.45
6,2	XXX	53	91	8	0.45
6,3	XXX	53	91	8	0.45
6,4	XXX	53	91	8	0.45
6,5	XXX	53	91	8	0.45
6,6	XXX	53	91	8	0.45
6,7	XXX	53	91	8	0.45
6,8	XXX	53	91	8	0.45
6,9	XXX	53	91	8	0.45
7	XXX	53	91	8	0.45
7,1	XXX	53	91	8	0.45
7,2	XXX	53	91	8	0.45
7,3	XXX	53	91	8	0.45
7,4	XXX	53	91	8	0.45
7,45	XXX	53	91	8	0.45
7,5	XXX	53	91	8	0.45
7,6	XXX	53	91	8	0.45
7,7	XXX	53	91	8	0.45
7,8	XXX	53	91	8	0.45
7,9	XXX	53	91	8	0.45
8	XXX	53	91	8	0.45
8,1	XXX	61	103	10	0.55
8,2	XXX	61	103	10	0.55
8,3	XXX	61	103	10	0.55
8,4	XXX	61	103	10	0.55
8,5	XXX	61	103	10	0.55
8,6	XXX	61	103	10	0.55
8,7	XXX	61	103	10	0.55
8,8	XXX	61	103	10	0.55
8,9	XXX	61	103	10	0.55
9	XXX	61	103	10	0.55
9,1	XXX	61	103	10	0.55
9,2	XXX	61	103	10	0.55
9,3	XXX	61	103	10	0.55

∅ h7	12 2602 Solid carbide HPC drill, plain shank DIN 6535 HA				Alu
			L_{tot}		f
mm	DLC	mm	mm	mm	mm/rev.
9,35	XXX	61	103	10	0.55
9,4	XXX	61	103	10	0.55
9,5	XXX	61	103	10	0.55
9,6	XXX	61	103	10	0.55
9,7	XXX	61	103	10	0.55
9,8	XXX	61	103	10	0.55
9,9	XXX	61	103	10	0.55
10	XXX	61	103	10	0.55
10,2	XXX	71	118	12	0.55
10,3	XXX	71	118	12	0.55
10,5	XXX	71	118	12	0.55
10,8	XXX	71	118	12	0.55
11	XXX	71	118	12	0.55
11,2	XXX	71	118	12	0.55
11,5	XXX	71	118	12	0.55
11,8	XXX	71	118	12	0.55
12	XXX	71	118	12	0.55
12,5	XXX	77	124	14	0.65
12,8	XXX	77	124	14	0.65
13	XXX	77	124	14	0.65
13,1	XXX	77	124	14	0.65
13,5	XXX	77	124	14	0.65
13,8	XXX	77	124	14	0.65
14	XXX	77	124	14	0.65
14,5	XXX	83	133	16	0.65
14,8	XXX	83	133	16	0.65
15	XXX	83	133	16	0.65
15,1	XXX	83	133	16	0.65
15,5	XXX	83	133	16	0.65
15,8	XXX	83	133	16	0.65
16	XXX	83	133	16	0.65
16,5	XXX	93	143	18	0.7
16,8	XXX	93	143	18	0.7
17	XXX	93	143	18	0.7
17,5	XXX	93	143	18	0.7
17,8	XXX	93	143	18	0.7
18	XXX	93	143	18	0.7
18,5	XXX	101	153	20	0.7
18,8	XXX	101	153	20	0.7
18,85	XXX	101	153	20	0.7
19	XXX	101	153	20	0.7
19,5	XXX	101	153	20	0.7
19,8	XXX	101	153	20	0.7
20	XXX	101	153	20	0.7

Solid carbide | DIN 6537 | 6×D | Type W | p6 | 2 | 140° | h6 DIN 6535 HA | 25 bar | HPC

Garant Solid carbide HPC pilot drill

Spiral fluted, with **6 guide chamfers** and internal cooling channels..
New generation of high performance pilot drills in the HPC range.
With **140° point angle** and special **p6 cutting edge tolerance** for optimum generation of a pilot hole. High **roundness and alignment accuracy of the pilot hole.**

Recommendation: Maximum drilling depth:
Flute length (see table) less 1.5×nominal ∅.

Note: For deep-hole drilling deeper than 16×D a pilot hole is recommended, and for deep-hole drilling from 20×D to 30×D it is essential. **The generation of a pilot hole improves process reliability.**
Form HB and HE supplied at the same price as HA.
Form **HB:** order with **No. 122608**.
Form **HE:** order with **No. 122606 + 129100HE**.

Plain shank DIN 6535 HA 12 2606

Weldon shank DIN 6535 HB 12 2608

Whistle-Notch shank DIN 6535 HE 12 2606 + 12 9100HE

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	PMMA acrylic	PE-HD	PA 66	PEEK	PF 31	AFRP aramid	PVDF GF20	POM GF25	PA 66 GF30	PEEK GF30	PTFE CF25	Cu	CuZn	GRP	CRP
ISO code	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
12 2606	360	400	350	150			120			90		80	70	80	160	200	80	80

∅ p6	1E	12 2606 Solid carbide HPC drill plain shank DIN 6535 HA				Alu
mm		DLC	mm	mm	mm	f mm/rev.
2		XXX	21	57	4	0.16
2,2		XXX	21	57	4	0.18
2,3		XXX	21	57	4	0.18
2,4		XXX	21	57	4	0.18
2,5		XXX	21	57	4	0.18
2,7		XXX	21	57	4	0.18
2,8		XXX	21	57	4	0.18
3		XXX	28	66	6	0.18
3,2		XXX	28	66	6	0.28
3,3		XXX	28	66	6	0.28
3,5		XXX	28	66	6	0.28
3,8		XXX	36	74	6	0.28
4		XXX	36	74	6	0.28
4,2		XXX	36	74	6	0.28
4,5		XXX	36	74	6	0.28
4,8		XXX	44	82	6	0.28
5		XXX	44	82	6	0.28
5,5		XXX	44	82	6	0.36

∅ p6	1E	12 2606 Solid carbide HPC drill plain shank DIN 6535 HA				Alu
mm		DLC	mm	mm	mm	f mm/rev.
5,8		XXX	44	82	6	0.36
6		XXX	44	82	6	0.36
6,5		XXX	53	91	8	0.36
6,8		XXX	53	91	8	0.36
7		XXX	53	91	8	0.36
7,5		XXX	53	91	8	0.36
7,8		XXX	53	91	8	0.36
8		XXX	53	91	8	0.36
8,5		XXX	61	103	10	0.44
8,8		XXX	61	103	10	0.44
9		XXX	61	103	10	0.44
9,8		XXX	61	103	10	0.44
10		XXX	61	103	10	0.44
10,2		XXX	71	118	12	0.44
10,8		XXX	71	118	12	0.44
11,8		XXX	71	118	12	0.44
12		XXX	71	118	12	0.44

Solid carbide | DIN 6537 | 6×D | Type H | h7 | 2 | 140° | h6 DIN 6535 HA | HPC

Garant

Solid carbide HPC drills for hard machining

Cutting chisel edge with **high centring accuracy** due to **strong core and special point geometry. Convex major cutting edges** with **defined honed edge** ensure the drill has high stability and maximum load capacity.
Special multi-nano layer coating for drilling in hardened steels.

Recommendation: Maximum drilling depth:
Flute length (see table) less 1.5×nominal ∅.

Note:
Form HB and HE supplied at the same price as HA.
Form **HB:** order with **No. 122642 / 122652**.
Form **HE:** order with **No. 122641 / 122651 + 129100HE**.

plain shank DIN 6535 HA 12 2641

plain shank DIN 6535 HA 12 2651

25 bar

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	TOOLOX® 33 HRC	TOOLOX® 44 HRC	HARDOX® 500 < 1600 N	GG(G)	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	H	H	H	K						
12 2641				90	80	70	65	55	28	16	14	10		30	28	28	70	●		●		●	
12 2651				120	100	85	70	55	28	16	14	10		30	28	28	70	●		●	●		●

Diabolo solid carbide HPC drill, plain shank

DIN 6535 HA

∅ h7	1E 12 2641	1E 12 2651		L_{tot}		< 60 HRC f		
							12 2641	12 2651
mm	TiAlN	TiAlN	mm	mm	mm	mm/rev.	mm/rev.
1	–	XXX	8	55	4	–	0.01
1,1	–	XXX	12	55	4	–	0.01
1,2	–	XXX	12	55	4	–	0.01
1,3	–	XXX	12	55	4	–	0.01
1,4	–	XXX	12	55	4	–	0.01
1,5	–	XXX	12	55	4	–	0.01
1,6	–	XXX	16	55	4	–	0.013
1,7	–	XXX	16	55	4	–	0.013
1,8	–	XXX	16	55	4	–	0.013
1,9	–	XXX	16	55	4	–	0.013
2	XXX	XXX	21	57	4	0.04	0.013
2,1	–	XXX	21	57	4	–	0.02
2,2	–	XXX	21	57	4	–	0.02
2,3	–	XXX	21	57	4	–	0.02
2,4	–	XXX	21	57	4	–	0.02
2,5	XXX	XXX	21	57	4	0.05	0.02
2,6	XXX	XXX	21	57	4	0.05	0.02
2,7	–	XXX	21	57	4	–	0.02
2,8	XXX	XXX	21	57	4	0.05	0.02
2,9	–	XXX	21	57	4	–	0.02
3	XXX	XXX	28	66	6	0.05	0.02
3,1	–	XXX	28	66	6	–	0.03
3,2	–	XXX	28	66	6	–	0.03
3,3	XXX	XXX	28	66	6	0.06	0.03
3,4	XXX	XXX	28	66	6	0.06	0.03
3,5	XXX	XXX	28	66	6	0.06	0.03
3,7	XXX	XXX	28	66	6	0.06	0.03
3,8	XXX	XXX	36	74	6	0.06	0.03
3,9	XXX	XXX	36	74	6	0.06	0.03
4	XXX	XXX	36	74	6	0.06	0.03
4,1	–	XXX	36	74	6	–	0.04
4,2	XXX	XXX	36	74	6	0.07	0.04
4,3	XXX	XXX	36	74	6	0.07	0.04
4,4	–	XXX	36	74	6	–	0.04
4,5	XXX	XXX	36	74	6	0.07	0.04
4,6	–	XXX	36	74	6	–	0.04
4,7	–	XXX	36	74	6	–	0.04
4,8	XXX	XXX	44	82	6	0.07	0.04
4,9	XXX	XXX	44	82	6	0.07	0.04
5	XXX	XXX	44	82	6	0.07	0.04
5,1	XXX	XXX	44	82	6	0.08	0.055
5,2	XXX	XXX	44	82	6	0.08	0.055
5,3	–	XXX	44	82	6	–	0.055
5,5	XXX	XXX	44	82	6	0.08	0.055
5,6	–	XXX	44	82	6	–	0.055
5,7	–	XXX	44	82	6	–	0.055
5,8	XXX	XXX	44	82	6	0.08	0.055
5,9	XXX	–	44	82	6	0.08	–
6	XXX	XXX	44	82	6	0.08	0.055
6,1	–	XXX	53	91	8	–	0.08
6,2	–	XXX	53	91	8	–	0.08
6,3	–	XXX	53	91	8	–	0.08
6,4	–	XXX	53	91	8	–	0.08

Diabolo solid carbide HPC drill, plain shank

DIN 6535 HA

∅ h7	1E 12 2641	1E 12 2651		L_{tot}		< 60 HRC f		
							12 2641	12 2651
mm	TiAlN	TiAlN	mm	mm	mm	mm/rev.	mm/rev.
6,5	XXX	XXX	53	91	8	0.09	0.08
6,6	–	XXX	53	91	8	–	0.08
6,7	–	XXX	53	91	8	–	0.08
6,8	XXX	XXX	53	91	8	0.09	0.08
6,9	–	XXX	53	91	8	–	0.08
7	XXX	XXX	53	91	8	0.09	0.08
7,2	XXX	–	53	91	8	0.09	–
7,4	–	XXX	53	91	8	–	0.08
7,5	–	XXX	53	91	8	–	0.08
7,7	–	XXX	53	91	8	–	0.08
7,8	XXX	XXX	53	91	8	0.09	0.08
7,9	XXX	–	53	91	8	0.09	–
8	XXX	XXX	53	91	8	0.09	0.08
8,2	–	XXX	61	103	10	–	0.12
8,4	–	XXX	61	103	10	–	0.12
8,5	XXX	XXX	61	103	10	0.11	0.12
8,6	–	XXX	61	103	10	–	0.12
8,7	XXX	XXX	61	103	10	0.11	0.12
8,8	XXX	XXX	61	103	10	0.11	0.12
9	XXX	XXX	61	103	10	0.11	0.12
9,3	–	XXX	61	103	10	–	0.12
9,4	–	XXX	61	103	10	–	0.12
9,5	–	XXX	61	103	10	–	0.12
9,7	–	XXX	61	103	10	–	0.12
9,8	XXX	XXX	61	103	10	0.11	0.12
9,9	XXX	–	61	103	10	0.11	–
10	XXX	XXX	61	103	10	0.11	0.12
10,2	XXX	XXX	71	118	12	0.11	0.12
10,3	XXX	XXX	71	118	12	0.11	0.12
10,5	XXX	XXX	71	118	12	0.11	0.12
11	XXX	XXX	71	118	12	0.11	0.12
11,2	–	XXX	71	118	12	–	0.12
11,5	–	XXX	71	118	12	–	0.12
11,8	XXX	XXX	71	118	12	0.11	0.12
11,9	XXX	–	71	118	12	0.11	–
12	XXX	XXX	71	118	12	0.11	0.12
12,2	–	XXX	77	124	14	–	0.16
12,5	XXX	XXX	77	124	14	0.13	0.16
12,8	–	XXX	77	124	14	–	0.16
13	XXX	XXX	77	124	14	0.13	0.16
13,5	–	XXX	77	124	14	–	0.16
14	XXX	XXX	77	124	14	0.13	0.16
14,5	–	XXX	83	133	16	–	0.16
14,9	XXX	–	83	133	16	0.13	–
15	XXX	XXX	83	133	16	0.13	0.16
15,5	–	XXX	83	133	16	–	0.16
15,8	–	XXX	83	133	16	–	0.16
15,9	XXX	–	83	133	16	0.13	–
16	XXX	XXX	83	133	16	0.15	0.16
17	–	XXX	93	143	18	–	0.2
17,5	XXX	XXX	93	143	18	0.15	0.2
18	XXX	XXX	93	143	18	0.15	0.2
20	–	XXX	101	153	20	–	0.2

Solid carbide | DIN 6537 | 6×D | 2 | 140° | h6 DIN 6535 HA | 25 bar | HPC | m6 | h7

Garant

Solid carbide HPC reference drill with 4 cooling channels

Cutting chisel edge with **high centring accuracy** due to **strong core and special point geometry.** High roundness and alignment accuracy of the deep hole, thanks to **4 guide chamfers.** Outstanding chip evacuation due to **4 internal cooling channels** from Ø 3.8 mm. Up to 3.7 mm Ø with 2 internal cooling channels. **Straight major cutting edges** with honed edges and special flute profile for **short chips**, even on long chipping materials.

Attention: Sizes **ending with X** = cutter Ø tolerance **h7.**

Recommendation: **Maximum drilling depth:**
Flute length (see table) less 1.5×nominal Ø.

Note:
Form HB and HE supplied at the same price as HA.
Form **HB:** order with **No. 122661**.
Form **HE:** order with **No. 122659 + 129100HE**.

Plain shank DIN 6535 HA 12 2659

Weldon shank DIN 6535 HB 12 2661

Whistle-Notch shank DIN 6535 HE 12 2659 + 12 9100HE

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	K						
12 2659				170	140	130	110	70						90	80		95	●		●	●		●

Ø m6 (Ø X = h7)	11E 12 2659 Solid carbide HPC drill plain shank DIN 6535 HA TiAlN	Tolerance nominal Ø		L_{tot}		INOX > 900 N f
mm or inch			mm	mm	mm	mm/rev.
0,9	XXX	m6	8	55	4	0.017
1	XXX	m6	8	55	4	0.02
1,1	XXX	m6	12	55	4	0.025
1,2	XXX	m6	12	55	4	0.025
1,25	XXX	m6	12	55	4	0.025
1,3	XXX	m6	12	55	4	0.025
1,4	XXX	m6	12	55	4	0.025
1,45	XXX	m6	12	55	4	0.025
1,5	XXX	m6	12	55	4	0.025
1,55	XXX	m6	12	55	4	0.025
1/16	XXX	m6	16	55	4	0.033
1,6	XXX	m6	16	55	4	0.033
1,7	XXX	m6	16	55	4	0.033
1,8	XXX	m6	16	55	4	0.033
1,85	XXX	m6	16	55	4	0.033
1,9	XXX	m6	16	55	4	0.033
2	XXX	m6	21	57	4	0.05
2,02X	XXX	h7	21	57	4	0.05
2,05	XXX	m6	21	57	4	0.05
2,1	XXX	m6	21	57	4	0.05
2,2	XXX	m6	21	57	4	0.05
2,3	XXX	m6	21	57	4	0.05
3/32	XXX	m6	21	57	4	0.05
2,4	XXX	m6	21	57	4	0.05
2,5	XXX	m6	21	57	4	0.05
2,52X	XXX	h7	21	57	4	0.05
2,6	XXX	m6	21	57	4	0.05
2,65	XXX	m6	21	57	4	0.05
2,7	XXX	m6	21	57	4	0.05
2,8	XXX	m6	21	57	4	0.05
2,85	XXX	m6	21	57	4	0.05
2,9	XXX	m6	21	57	4	0.05
3	XXX	m6	28	66	6	0.08
3,02X	XXX	h7	28	66	6	0.08
3,05	XXX	m6	28	66	6	0.08
3,1	XXX	m6	28	66	6	0.08
1/8	XXX	m6	28	66	6	0.08
3,2	XXX	m6	28	66	6	0.08
3,25	XXX	m6	28	66	6	0.08
3,3	XXX	m6	28	66	6	0.08
3,4	XXX	m6	28	66	6	0.08
3,5	XXX	m6	28	66	6	0.08

Ø m6 (Ø X = h7)	11E 12 2659 Solid carbide HPC drill plain shank DIN 6535 HA TiAlN	Tolerance nominal Ø		L_{tot}		INOX > 900 N f
mm or inch			mm	mm	mm	mm/rev.
3,52X	XXX	h7	28	66	6	0.08
3,55	XXX	m6	28	66	6	0.08
3,6	XXX	m6	28	66	6	0.08
3,65	XXX	m6	28	66	6	0.08
3,7	XXX	m6	28	66	6	0.08
3,8	XXX	m6	36	74	6	0.08
W/L-25	XXX	m6	36	74	6	0.08
3,9	XXX	m6	36	74	6	0.08
5/32	XXX	m6	36	74	6	0.08
4	XXX	m6	36	74	6	0.08
4,02X	XXX	h7	36	74	6	0.08
4,05	XXX	m6	36	74	6	0.08
4,1	XXX	m6	36	74	6	0.08
4,15	XXX	m6	36	74	6	0.08
4,2	XXX	m6	36	74	6	0.08
4,3	XXX	m6	36	74	6	0.08
4,4	XXX	m6	36	74	6	0.08
4,5	XXX	m6	36	74	6	0.08
W/L-16	XXX	m6	36	74	6	0.08
4,6	XXX	m6	36	74	6	0.08
4,65	XXX	m6	36	74	6	0.08
4,7	XXX	m6	36	74	6	0.08
3/16	XXX	m6	44	82	6	0.08
4,8	XXX	m6	44	82	6	0.08
4,9	XXX	m6	44	82	6	0.08
5	XXX	m6	44	82	6	0.08
5,02X	XXX	h7	44	82	6	0.12
5,05	XXX	m6	44	82	6	0.12
5,1	XXX	m6	44	82	6	0.12
5,2	XXX	m6	44	82	6	0.12
5,25	XXX	m6	44	82	6	0.12
5,3	XXX	m6	44	82	6	0.12
5,4	XXX	m6	44	82	6	0.12
5,5	XXX	m6	44	82	6	0.12
5,55	XXX	m6	44	82	6	0.12
7/32	XXX	m6	44	82	6	0.12
5,6	XXX	m6	44	82	6	0.12
5,65	XXX	m6	44	82	6	0.12
5,7	XXX	m6	44	82	6	0.12
5,8	XXX	m6	44	82	6	0.12
5,9	XXX	m6	44	82	6	0.12
6	XXX	m6	44	82	6	0.12

Ø m6 (Ø X = h7)	11E 12 2659 Solid carbide HPC drill plain shank DIN 6535 HA TiAlN	Tolerance nominal Ø	mm	L_{tot} mm	mm	INOX > 900 N f mm/rev.
mm or inch						
6,02X	XXX	h7	44	82	6	0.12
6,05	XXX	m6	53	91	8	0.12
6,1	XXX	m6	53	91	8	0.12
6,15	XXX	m6	53	91	8	0.12
W/L-C	XXX	m6	53	91	8	0.12
6,2	XXX	m6	53	91	8	0.12
6,3	XXX	m6	53	91	8	0.12
1/4	XXX	m6	53	91	8	0.12
6,35	XXX	m6	53	91	8	0.12
6,4	XXX	m6	53	91	8	0.12
6,5	XXX	m6	53	91	8	0.12
6,6	XXX	m6	53	91	8	0.12
6,7	XXX	m6	53	91	8	0.12
6,8	XXX	m6	53	91	8	0.12
6,9	XXX	m6	53	91	8	0.12
7	XXX	m6	53	91	8	0.12
7,02X	XXX	h7	53	91	8	0.12
7,1	XXX	m6	53	91	8	0.12
9/32	XXX	m6	53	91	8	0.12
7,2	XXX	m6	53	91	8	0.12
7,25	XXX	m6	53	91	8	0.12
7,3	XXX	m6	53	91	8	0.12
7,4	XXX	m6	53	91	8	0.12
7,45	XXX	m6	53	91	8	0.12
7,5	XXX	m6	53	91	8	0.12
7,55	XXX	m6	53	91	8	0.12
7,6	XXX	m6	53	91	8	0.12
7,7	XXX	m6	53	91	8	0.12
7,8	XXX	m6	53	91	8	0.12
7,9	XXX	m6	53	91	8	0.12
5/16	XXX	m6	53	91	8	0.12
8	XXX	m6	53	91	8	0.12
8,02X	XXX	h7	53	91	8	0.15
8,05	XXX	m6	61	103	10	0.15
8,1	XXX	m6	61	103	10	0.15
8,15	XXX	m6	61	103	10	0.15
8,2	XXX	m6	61	103	10	0.15
8,25	XXX	m6	61	103	10	0.15
8,3	XXX	m6	61	103	10	0.15
8,4	XXX	m6	61	103	10	0.15
8,5	XXX	m6	61	103	10	0.15
8,52X	XXX	h7	61	103	10	0.15
8,6	XXX	m6	61	103	10	0.15
8,7	XXX	m6	61	103	10	0.15
11/32	XXX	m6	61	103	10	0.15
8,8	XXX	m6	61	103	10	0.15
8,9	XXX	m6	61	103	10	0.15
9	XXX	m6	61	103	10	0.15
9,02X	XXX	h7	61	103	10	0.15
9,1	XXX	m6	61	103	10	0.15
9,2	XXX	m6	61	103	10	0.15
9,25	XXX	m6	61	103	10	0.15
9,3	XXX	m6	61	103	10	0.15
9,35	XXX	m6	61	103	10	0.15
9,4	XXX	m6	61	103	10	0.15
9,5	XXX	m6	61	103	10	0.15
3/8	XXX	m6	61	103	10	0.15
9,55	XXX	m6	61	103	10	0.15
9,6	XXX	m6	61	103	10	0.15
9,7	XXX	m6	61	103	10	0.15
9,8	XXX	m6	61	103	10	0.15
9,9	XXX	m6	61	103	10	0.15
10	XXX	m6	61	103	10	0.15
10,02X	XXX	h7	61	103	10	0.15
10,05	XXX	m6	71	118	12	0.15
10,1	XXX	m6	71	118	12	0.15
10,2	XXX	m6	71	118	12	0.15
10,25	XXX	m6	71	118	12	0.15
10,3	XXX	m6	71	118	12	0.15
13/32	XXX	m6	71	118	12	0.15
10,4	XXX	m6	71	118	12	0.15
10,5	XXX	m6	71	118	12	0.15
10,6	XXX	m6	71	118	12	0.15
10,7	XXX	m6	71	118	12	0.15
10,75	XXX	m6	71	118	12	0.15

Ø m6 (Ø X = h7)	11E 12 2659 Solid carbide HPC drill plain shank DIN 6535 HA TiAlN	Tolerance nominal Ø	mm	L_{tot} mm	mm	INOX > 900 N f mm/rev.
mm or inch						
10,8	XXX	m6	71	118	12	0.15
10,85	XXX	m6	71	118	12	0.15
10,9	XXX	m6	71	118	12	0.15
11	XXX	m6	71	118	12	0.15
11,1	XXX	m6	71	118	12	0.15
7/16	XXX	m6	71	118	12	0.15
11,2	XXX	m6	71	118	12	0.15
11,25	XXX	m6	71	118	12	0.15
11,3	XXX	m6	71	118	12	0.15
11,35	XXX	m6	71	118	12	0.15
11,4	XXX	m6	71	118	12	0.15
11,5	XXX	m6	71	118	12	0.15
11,55	XXX	m6	71	118	12	0.15
11,6	XXX	m6	71	118	12	0.15
11,7	XXX	m6	71	118	12	0.15
11,8	XXX	m6	71	118	12	0.15
11,9	XXX	m6	71	118	12	0.15
12	XXX	m6	71	118	12	0.15
12,02X	XXX	h7	71	118	12	0.2
12,05	XXX	m6	77	124	14	0.2
12,2	XXX	m6	77	124	14	0.2
12,25	XXX	m6	77	124	14	0.2
12,5	XXX	m6	77	124	14	0.2
12,55	XXX	m6	77	124	14	0.2
1/2	XXX	m6	77	124	14	0.2
12,7	XXX	m6	77	124	14	0.2
12,8	XXX	m6	77	124	14	0.2
12,9	XXX	m6	77	124	14	0.2
13	XXX	m6	77	124	14	0.2
13,1	XXX	m6	77	124	14	0.2
33/64	XXX	m6	77	124	14	0.2
13,2	XXX	m6	77	124	14	0.2
13,5	XXX	m6	77	124	14	0.2
13,8	XXX	m6	77	124	14	0.2
14	XXX	m6	77	124	14	0.2
14,05	XXX	m6	83	133	16	0.2
14,1	XXX	m6	83	133	16	0.2
14,2	XXX	m6	83	133	16	0.2
14,25	XXX	m6	83	133	16	0.2
9/16	XXX	m6	83	133	16	0.2
14,3	XXX	m6	83	133	16	0.2
14,5	XXX	m6	83	133	16	0.2
14,8	XXX	m6	83	133	16	0.2
15	XXX	m6	83	133	16	0.2
15,05	XXX	m6	83	133	16	0.2
15,1	XXX	m6	83	133	16	0.2
15,2	XXX	m6	83	133	16	0.2
15,25	XXX	m6	83	133	16	0.2
15,35	XXX	m6	83	133	16	0.2
15,5	XXX	m6	83	133	16	0.2
15,8	XXX	m6	83	133	16	0.2
5/8	XXX	m6	83	133	16	0.2
16	XXX	m6	83	133	16	0.2
16,05	XXX	m6	83	133	16	0.2
16,25	XXX	m6	93	143	18	0.2
16,5	XXX	m6	93	143	18	0.25
16,8	XXX	m6	93	143	18	0.25
17	XXX	m6	93	143	18	0.25
17,35	XXX	m6	93	143	18	0.25
17,5	XXX	m6	93	143	18	0.25
17,8	XXX	m6	93	143	18	0.25
17,85	XXX	m6	93	143	18	0.25
17,9	XXX	m6	93	143	18	0.25
18	XXX	m6	93	143	18	0.25
18,5	XXX	m6	101	153	20	0.25
18,8	XXX	m6	101	153	20	0.25
18,85	XXX	m6	101	153	20	0.25
19	XXX	m6	101	153	20	0.25
19,25	XXX	m6	101	153	20	0.25
19,35	XXX	m6	101	153	20	0.25
19,5	XXX	m6	101	153	20	0.25
19,8	XXX	m6	101	153	20	0.25
20	XXX	m6	101	153	20	0.25
20,05	XXX	m6	101	153	20	0.25

Solid carbide | DIN 6537 | 6×D | m7 | 2 | 140° | h6 DIN 6535 HA | 25 bar

HOLEX Solid carbide high performance drill

Cutting chisel edge with **high centring accuracy** due to **strong core and special point geometry. Straight major cutting edges** with slightly honed edges and special flute profile produce **short chips.**

Recommendation: Maximum drilling depth:
flute length (see table) less 1.5×nominal Ø.

Note:
Form HB and HE supplied at the same price as HA.
Form **HB:** order with **No. 122666**.
Form **HE:** order with **No. 122668**.

Plain shank DIN 6535 HA 12 2664

Weldon shank DIN 6535 HB 12 2666

Whistle-Notch shank DIN 6535 HE 12 2668

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	K						
12 2664		140	120	110	90	80	60	35						45	40	30	70	●		●	●		●

Ø m7	12 2664 Solid carbide high performance drill plain shank DIN 6535 HA				INOX < 900 N
mm	TiAlN	mm	L_{tot} mm	mm	f mm/rev.
1	XXX	8	45	4	0.02
1,1	XXX	9	45	4	0.02
1,2	XXX	9.5	45	4	0.02
1,3	XXX	10.5	45	4	0.02
1,4	XXX	11	45	4	0.02
1,5	XXX	12	50	4	0.02
1,6	XXX	13	50	4	0.02
1,7	XXX	13.5	50	4	0.02
1,8	XXX	14.5	50	4	0.02
1,9	XXX	15	50	4	0.02
2	XXX	16	50	4	0.05
2,1	XXX	17	55	4	0.05
2,2	XXX	17.5	55	4	0.05
2,3	XXX	18.5	55	4	0.05
2,4	XXX	19	55	4	0.05
2,5	XXX	20	55	4	0.05
2,6	XXX	21	55	4	0.05
2,7	XXX	21.5	55	4	0.05
2,8	XXX	22.5	55	4	0.05
2,9	XXX	23	55	4	0.05
3	XXX	28	66	6	0.07
3,1	XXX	28	66	6	0.07
3,2	XXX	28	66	6	0.07
3,3	XXX	28	66	6	0.07
3,4	XXX	28	66	6	0.07
3,5	XXX	28	66	6	0.07
3,6	XXX	28	66	6	0.07
3,7	XXX	28	66	6	0.07
3,8	XXX	36	74	6	0.07
3,9	XXX	36	74	6	0.07
4	XXX	36	74	6	0.07
4,1	XXX	36	74	6	0.07
4,2	XXX	36	74	6	0.07
4,3	XXX	36	74	6	0.07
4,4	XXX	36	74	6	0.07
4,5	XXX	36	74	6	0.07
4,6	XXX	36	74	6	0.07
4,7	XXX	36	74	6	0.07
4,8	XXX	44	82	6	0.07
4,9	XXX	44	82	6	0.07
5	XXX	44	82	6	0.07
5,1	XXX	44	82	6	0.07
5,2	XXX	44	82	6	0.07
5,3	XXX	44	82	6	0.07
5,4	XXX	44	82	6	0.07
5,5	XXX	44	82	6	0.07
5,6	XXX	44	82	6	0.07
5,7	XXX	44	82	6	0.07
5,8	XXX	44	82	6	0.07
5,9	XXX	44	82	6	0.07
6	XXX	44	82	6	0.1
6,1	XXX	53	91	8	0.1
6,2	XXX	53	91	8	0.1
6,3	XXX	53	91	8	0.1
6,4	XXX	53	91	8	0.1
6,5	XXX	53	91	8	0.1
6,6	XXX	53	91	8	0.1
6,7	XXX	53	91	8	0.1

Ø m7	12 2664 Solid carbide high performance drill plain shank DIN 6535 HA				INOX < 900 N
mm	TiAlN	mm	L_{tot} mm	mm	f mm/rev.
6,8	XXX	53	91	8	0.1
6,9	XXX	53	91	8	0.1
7	XXX	53	91	8	0.1
7,4	XXX	53	91	8	0.1
7,5	XXX	53	91	8	0.1
7,7	XXX	53	91	8	0.1
7,8	XXX	53	91	8	0.1
7,9	XXX	53	91	8	0.1
8	XXX	53	91	8	0.1
8,1	XXX	61	103	10	0.1
8,2	XXX	61	103	10	0.1
8,3	XXX	61	103	10	0.1
8,5	XXX	61	103	10	0.1
8,6	XXX	61	103	10	0.1
8,7	XXX	61	103	10	0.1
8,8	XXX	61	103	10	0.1
8,9	XXX	61	103	10	0.1
9	XXX	61	103	10	0.12
9,1	XXX	61	103	10	0.12
9,3	XXX	61	103	10	0.12
9,4	XXX	61	103	10	0.12
9,5	XXX	61	103	10	0.12
9,6	XXX	61	103	10	0.12
9,8	XXX	61	103	10	0.12
9,9	XXX	61	103	10	0.12
10	XXX	61	103	10	0.12
10,2	XXX	71	118	12	0.12
10,3	XXX	71	118	12	0.12
10,5	XXX	71	118	12	0.12
10,8	XXX	71	118	12	0.12
11	XXX	71	118	12	0.12
11,2	XXX	71	118	12	0.12
11,5	XXX	71	118	12	0.12
11,8	XXX	71	118	12	0.12
12	XXX	71	118	12	0.15
12,2	XXX	77	124	14	0.15
12,5	XXX	77	124	14	0.15
12,8	XXX	77	124	14	0.15
13	XXX	77	124	14	0.15
13,5	XXX	77	124	14	0.15
13,8	XXX	77	124	14	0.15
14	XXX	77	124	14	0.15
14,2	XXX	83	133	16	0.15
14,5	XXX	83	133	16	0.15
14,8	XXX	83	133	16	0.15
15	XXX	83	133	16	0.15
15,5	XXX	83	133	16	0.15
15,8	XXX	83	133	16	0.15
16	XXX	83	133	16	0.16
16,5	XXX	93	143	18	0.16
17	XXX	93	143	18	0.16
17,5	XXX	93	143	18	0.16
18	XXX	93	143	18	0.16
18,5	XXX	101	153	20	0.16
19	XXX	101	153	20	0.16
19,5	XXX	101	153	20	0.18
20	XXX	101	153	20	0.18

Solid carbide | DIN 6537 | 6×D | Type FS | h7 | 2 | 140° | h6 DIN 6535 HA | 25 bar | HPC

Garant Solid carbide HPC drill

Particularly strong due to strengthened core and **special profile.** Special point geometry.
High concentricity and **long tool life.**
High bore quality.
Recommendation: Maximum drilling depth:
flute length (see table) less 1.5×nominal ∅.

Note:	Form HB and HE supplied at the same price as HA. Form **HB:** order with **No. 122675**. Form **HE:** order with **No. 122670 + 129100HE**.

Plain shank DIN 6535 HA 12 2670

Weldon shank DIN 6535 HB 12 2675

Whistle-Notch shank DIN 6535 HE 12 2670 + 129100HE

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	Graphite GRP CRP	Uni
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	N	
12 2670	260	240	160	110	90	85	60	30						40	35	35		○

∅ h7	12 2670					Ti > 850 N
	Solid carbide HPC drill type FS plain shank DIN 6535 HA					f
mm	TiAlN	mm	mm	mm	mm/rev.
2	XXX	21	57	4	0.02
2,1	XXX	21	57	4	0.02
2,3	XXX	21	57	4	0.02
2,4	XXX	21	57	4	0.02
2,5	XXX	21	57	4	0.02
2,6	XXX	21	57	4	0.02
2,7	XXX	21	57	4	0.02
2,8	XXX	21	57	4	0.02
2,9	XXX	21	57	4	0.02
3	XXX	28	66	6	0.02
3,1	XXX	28	66	6	0.04
3,2	XXX	28	66	6	0.04
3,3	XXX	28	66	6	0.04
3,4	XXX	28	66	6	0.04
3,5	XXX	28	66	6	0.04
3,6	XXX	28	66	6	0.04
3,7	XXX	28	66	6	0.04
3,8	XXX	28	66	6	0.04
3,9	XXX	28	66	6	0.04
4	XXX	28	66	6	0.04
4,1	XXX	44	82	6	0.04
4,2	XXX	44	82	6	0.04
4,3	XXX	44	82	6	0.04
4,4	XXX	44	82	6	0.04
4,5	XXX	44	82	6	0.04
4,6	XXX	44	82	6	0.04
4,7	XXX	44	82	6	0.04
4,8	XXX	44	82	6	0.04
4,9	XXX	44	82	6	0.04
5	XXX	44	82	6	0.04
5,1	XXX	44	82	6	0.08
5,2	XXX	44	82	6	0.08
5,3	XXX	44	82	6	0.08
5,4	XXX	44	82	6	0.08
5,5	XXX	44	82	6	0.08
5,6	XXX	44	82	6	0.08
5,7	XXX	44	82	6	0.08
5,8	XXX	44	82	6	0.08
5,9	XXX	44	82	6	0.08
6	XXX	44	82	6	0.08
6,1	XXX	53	91	8	0.08
6,2	XXX	53	91	8	0.08
6,3	XXX	53	91	8	0.08
6,4	XXX	53	91	8	0.08
6,5	XXX	53	91	8	0.08
6,6	XXX	53	91	8	0.08
6,8	XXX	53	91	8	0.08
6,9	XXX	53	91	8	0.08
7	XXX	53	91	8	0.08

∅ h7	12 2670				Ti > 850 N
	Solid carbide HPC drill type FS plain shank DIN 6535 HA				f
mm	TiAlN	mm	mm	mm	mm/rev.
7,1	XXX	53	91	8	0.08
7,2	XXX	53	91	8	0.08
7,3	XXX	53	91	8	0.08
7,4	XXX	53	91	8	0.08
7,5	XXX	53	91	8	0.08
7,6	XXX	53	91	8	0.08
7,8	XXX	53	91	8	0.08
7,9	XXX	53	91	8	0.08
8	XXX	53	91	8	0.08
8,1	XXX	61	103	10	0.12
8,2	XXX	61	103	10	0.12
8,3	XXX	61	103	10	0.12
8,4	XXX	61	103	10	0.12
8,5	XXX	61	103	10	0.12
8,8	XXX	61	103	10	0.12
9	XXX	61	103	10	0.12
9,3	XXX	61	103	10	0.12
9,4	XXX	61	103	10	0.12
9,5	XXX	61	103	10	0.12
9,6	XXX	61	103	10	0.12
9,7	XXX	61	103	10	0.12
9,8	XXX	61	103	10	0.12
10	XXX	61	103	10	0.12
10,2	XXX	71	118	12	0.12
10,5	XXX	71	118	12	0.12
10,8	XXX	71	118	12	0.12
11	XXX	71	118	12	0.12
11,2	XXX	71	118	12	0.12
11,5	XXX	71	118	12	0.12
11,8	XXX	71	118	12	0.12
12	XXX	71	118	12	0.12
12,5	XXX	77	124	14	0.16
12,8	XXX	77	124	14	0.16
13	XXX	77	124	14	0.16
13,5	XXX	77	124	14	0.16
13,8	XXX	77	124	14	0.16
14	XXX	77	124	14	0.16
14,2	XXX	83	133	16	0.16
14,5	XXX	83	133	16	0.16
15	XXX	83	133	16	0.16
15,2	XXX	83	133	16	0.16
15,5	XXX	83	133	16	0.16
15,8	XXX	83	133	16	0.16
16	XXX	83	133	16	0.16
16,5	XXX	93	143	18	0.2
18	XXX	93	143	18	0.2
18,5	XXX	101	153	20	0.2
19	XXX	101	153	20	0.2
20	XXX	101	153	20	0.2

Solid carbide | DIN 6537 | 6×D | h7 | 2 | 135° | h6 DIN 6535 HA | 25 bar | HPC

Garant

Solid carbide 3-flute drill HPC for cast iron

3 guide chamfers for particularly high accuracy and surface quality at tight hole tolerances. **Asymmetrical tip geometry** for **very high metal removal rates.** New generation of **innovative high-performance drills for cast iron** in the HPC field.

Advantage: For HPC high performance drilling in castings. **Outstandingly suitable for bainite cast iron (ADI).**

Recommendation: **Maximum drilling depth:**
Flute length (see table) less 1.5×nominal Ø.

Note:
Form HB and HE supplied at the same price as HA.
Form **HB:** order with **No. 122690 + 129100HB** .
Form **HE:** order with **No. 122690 + 129100HE**.

Plain shank DIN 6535 HA 12 2690

Weldon shank DIN 6535 HB 12 2690 + 12 9100HB

Whistle-Notch shank DIN 6535 HE 12 2690 + 12 9100HE

Suitable for/ v_c [m/min]	PMMA acrylic	PE-HD	PA 66	PEEK	PF 31	AFRP aramid	PVDF GF20	POM GF25	PA 66 GF30	PEEK GF30	PTFE CF25	PEEK CF30	Hybrid	Honey-comb sandwich	GG	GGG	GJS ADI ≥ 800 N	MMC					
ISO code	N	N	N	N	N	N	N	N	N	N	N	N	N	N	K	K	K	N					
12 2690															110	90	70			●	●		

Ø h7	11E	12 2690					GJS ADI ≥ 800 N	Ø h7	11E	12 2690					GJS ADI ≥ 800 N
		Solid carbide HPC drill plain shank DIN 6535 HA		L_{tot}			f			Solid carbide HPC drill plain shank DIN 6535 HA		L_{tot}			f
mm		TiAlN	mm	mm	mm	mm/rev.		mm		TiAlN	mm	mm	mm	mm/rev.	
3		XXX	28	66	6	0.16		8,7		(XXX)	61	103	10	0.29	
3,1		(XXX)	28	66	6	0.16		8,8		XXX	61	103	10	0.29	
3,17		XXX	28	66	6	0.16		8,9		(XXX)	61	103	10	0.29	
3,2		(XXX)	28	66	6	0.16		9		XXX	61	103	10	0.29	
3,3		XXX	28	66	6	0.16		9,1		(XXX)	61	103	10	0.29	
3,4		XXX	28	66	6	0.16		9,2		(XXX)	61	103	10	0.29	
3,5		XXX	28	66	6	0.16		9,3		(XXX)	61	103	10	0.29	
3,6		(XXX)	28	66	6	0.16		9,4		(XXX)	61	103	10	0.29	
3,7		(XXX)	28	66	6	0.16		9,5		XXX	61	103	10	0.29	
3,8		(XXX)	36	74	6	0.16		9,6		(XXX)	61	103	10	0.29	
3,9		(XXX)	36	74	6	0.16		9,7		(XXX)	61	103	10	0.29	
4		XXX	36	74	6	0.16		9,8		(XXX)	61	103	10	0.29	
4,1		(XXX)	36	74	6	0.16		9,9		(XXX)	61	103	10	0.29	
4,2		XXX	36	74	6	0.16		10		XXX	61	103	10	0.29	
4,3		XXX	36	74	6	0.16		10,1		(XXX)	71	118	12	0.29	
4,4		(XXX)	36	74	6	0.16		10,2		XXX	71	118	12	0.29	
4,5		XXX	36	74	6	0.16		10,3		XXX	71	118	12	0.29	
4,6		(XXX)	36	74	6	0.16		10,4		(XXX)	71	118	12	0.29	
4,7		(XXX)	36	74	6	0.16		10,5		XXX	71	118	12	0.29	
4,8		(XXX)	44	82	6	0.16		10,6		(XXX)	71	118	12	0.29	
4,9		(XXX)	44	82	6	0.16		10,7		(XXX)	71	118	12	0.29	
5		XXX	44	82	6	0.22		10,8		(XXX)	71	118	12	0.29	
5,1		XXX	44	82	6	0.22		10,9		(XXX)	71	118	12	0.29	
5,2		(XXX)	44	82	6	0.22		11		XXX	71	118	12	0.29	
5,3		(XXX)	44	82	6	0.22		11,1		(XXX)	71	118	12	0.29	
5,4		(XXX)	44	82	6	0.22		11,2		(XXX)	71	118	12	0.29	
5,5		XXX	44	82	6	0.22		11,3		(XXX)	71	118	12	0.29	
5,6		(XXX)	44	82	6	0.22		11,4		(XXX)	71	118	12	0.29	
5,7		(XXX)	44	82	6	0.22		11,5		XXX	71	118	12	0.29	
5,8		(XXX)	44	82	6	0.22		11,6		(XXX)	71	118	12	0.29	
5,9		(XXX)	44	82	6	0.22		11,7		(XXX)	71	118	12	0.29	
6		XXX	44	82	6	0.22		11,8		XXX	71	118	12	0.29	
6,1		(XXX)	53	91	8	0.22		11,9		(XXX)	71	118	12	0.29	
6,2		(XXX)	53	91	8	0.22		12		XXX	71	118	12	0.35	
6,3		(XXX)	53	91	8	0.22		12,5		XXX	77	124	14	0.35	
6,35		XXX	53	91	8	0.22		12,8		(XXX)	77	124	14	0.35	
6,4		(XXX)	53	91	8	0.22		13		XXX	77	124	14	0.35	
6,5		XXX	53	91	8	0.22		13,5		XXX	77	124	14	0.35	
6,6		(XXX)	53	91	8	0.22		13,8		(XXX)	77	124	14	0.35	
6,7		(XXX)	53	91	8	0.22		14		XXX	77	124	14	0.39	
6,8		XXX	53	91	8	0.22		14,5		(XXX)	83	133	16	0.39	
6,9		XXX	53	91	8	0.22		14,8		(XXX)	83	133	16	0.39	
7		XXX	53	91	8	0.22		15		(XXX)	83	133	16	0.39	
7,1		(XXX)	53	91	8	0.22		15,5		(XXX)	83	133	16	0.39	
7,2		(XXX)	53	91	8	0.22		15,8		(XXX)	83	133	16	0.39	
7,3		(XXX)	53	91	8	0.22		16		XXX	83	133	16	0.43	
7,4		(XXX)	53	91	8	0.22		16,5		(XXX)	93	143	18	0.43	
7,5		XXX	53	91	8	0.22		16,8		(XXX)	93	143	18	0.43	
7,6		(XXX)	53	91	8	0.22		17		(XXX)	93	143	18	0.43	
7,7		(XXX)	53	91	8	0.22		17,5		(XXX)	93	143	18	0.43	
7,8		(XXX)	53	91	8	0.22		17,8		(XXX)	93	143	18	0.43	
7,9		(XXX)	53	91	8	0.22		18		(XXX)	93	143	18	0.46	
8		XXX	53	91	8	0.29		18,5		(XXX)	101	153	20	0.46	
8,1		(XXX)	61	103	10	0.29		18,8		(XXX)	101	153	20	0.46	
8,2		(XXX)	61	103	10	0.29		19		(XXX)	101	153	20	0.46	
8,3		(XXX)	61	103	10	0.29		19,5		(XXX)	101	153	20	0.46	
8,4		(XXX)	61	103	10	0.29		19,8		(XXX)	101	153	20	0.46	
8,5		XXX	61	103	10	0.29		20		(XXX)	101	153	20	0.46	
8,6		XXX	61	103	10	0.29									

Solid carbide | DIN 6537 | 6×D | h7 | 2 | 135° | h6 DIN 6535 HA | 25 bar | HPC

GARANT Master Steel SPEED solid carbide drill

Developed for use with **very high cutting speeds**.
Outstandingly suitable for machines with **low power output** and high speeds.

- Clear reduction in cutting forces due to special cutter geometry.
- Coating for best wear resistance even at high process temperatures.
- Polished flutes for good chip clearance.

A **slim chisel edge** and the **special arrangement of the 4 guide chamfers** ensure **high positioning and alignment accuracy**.
Optimised micro-geometry for increased working life and performance capability.

Recommendation:Maximum drilling depth:
flute length (see table) less 1.5×nominal Ø.

Note:	Form HB and HE supplied at the same price as HA. Form **HB:** order with **No. 122716**. Form **HE:** order with **No. 122715 + 129100HE**.

Plain shank DIN 6535 HA 122715

Weldon shank DIN 6535 HB 122716

Whistle-Notch shank DIN 6535 HE 122715 + 129100HE

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	GG	GGG	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	K	K						
122715				220	200	180	170	90						75		160	130	●		●	●		

Ø h7	122715	L_{tot}	< 1100 N f
	GARANT Master Steel SPEED solid carbide drill, plain shank DIN 6535 HA		
mm	TiAlN	mm	mm	mm	mm/rev.
2	XXX	21	57	4	0.09
2,05	XXX	21	57	4	0.09
2,1	XXX	21	57	4	0.09
2,2	XXX	21	57	4	0.09
2,3	XXX	21	57	4	0.09
2,4	XXX	21	57	4	0.09
2,5	XXX	21	57	4	0.09
2,6	XXX	21	57	4	0.09
2,7	XXX	21	57	4	0.09
2,8	XXX	21	57	4	0.09
2,9	XXX	21	57	4	0.09
3	XXX	28	66	6	0.12
3,1	XXX	28	66	6	0.12
3,2	XXX	28	66	6	0.12
3,25	XXX	28	66	6	0.12
3,3	XXX	28	66	6	0.12
3,4	XXX	28	66	6	0.12
3,5	XXX	28	66	6	0.12
3,6	XXX	28	66	6	0.12
3,7	XXX	28	66	6	0.12
3,8	XXX	36	74	6	0.12
3,9	XXX	36	74	6	0.12
4	XXX	36	74	6	0.12
4,1	XXX	36	74	6	0.16
4,2	XXX	36	74	6	0.16
4,3	XXX	36	74	6	0.16
4,4	XXX	36	74	6	0.16
4,5	XXX	36	74	6	0.16
4,6	XXX	36	74	6	0.16
4,65	XXX	36	74	6	0.16
4,7	XXX	36	74	6	0.16
4,8	XXX	44	82	6	0.16
4,9	XXX	44	82	6	0.16
5	XXX	44	82	6	0.16
5,1	XXX	44	82	6	0.19
5,2	XXX	44	82	6	0.19
5,3	XXX	44	82	6	0.19
5,4	XXX	44	82	6	0.19
5,5	XXX	44	82	6	0.19
5,55	XXX	44	82	6	0.19
5,6	XXX	44	82	6	0.19
5,7	XXX	44	82	6	0.19
5,8	XXX	44	82	6	0.19
5,9	XXX	44	82	6	0.19
6	XXX	44	82	6	0.19
6,1	XXX	53	91	8	0.22
6,2	XXX	53	91	8	0.22
6,3	XXX	53	91	8	0.22

Ø h7	122715	L_{tot}	< 1100 N f
	GARANT Master Steel SPEED solid carbide drill, plain shank DIN 6535 HA		
mm	TiAlN	mm	mm	mm	mm/rev.
6,4	XXX	53	91	8	0.22
6,5	XXX	53	91	8	0.22
6,6	XXX	53	91	8	0.22
6,7	XXX	53	91	8	0.22
6,8	XXX	53	91	8	0.22
6,9	XXX	53	91	8	0.22
7	XXX	53	91	8	0.22
7,1	XXX	53	91	8	0.22
7,2	XXX	53	91	8	0.22
7,3	XXX	53	91	8	0.22
7,4	XXX	53	91	8	0.22
7,45	XXX	53	91	8	0.22
7,5	XXX	53	91	8	0.22
7,6	XXX	53	91	8	0.22
7,7	XXX	53	91	8	0.22
7,8	XXX	53	91	8	0.22
7,9	XXX	53	91	8	0.22
8	XXX	53	91	8	0.22
8,1	XXX	61	103	10	0.26
8,2	XXX	61	103	10	0.26
8,3	XXX	61	103	10	0.26
8,4	XXX	61	103	10	0.26
8,5	XXX	61	103	10	0.26
8,6	XXX	61	103	10	0.26
8,7	XXX	61	103	10	0.26
8,8	XXX	61	103	10	0.26
8,9	XXX	61	103	10	0.26
9	XXX	61	103	10	0.26
9,1	XXX	61	103	10	0.26
9,2	XXX	61	103	10	0.26
9,3	XXX	61	103	10	0.26
9,35	XXX	61	103	10	0.26
9,4	XXX	61	103	10	0.26
9,5	XXX	61	103	10	0.26
9,55	XXX	61	103	10	0.26
9,6	XXX	61	103	10	0.26
9,7	XXX	61	103	10	0.26
9,8	XXX	61	103	10	0.26
9,9	XXX	61	103	10	0.26
10	XXX	61	103	10	0.26
10,1	XXX	71	118	12	0.28
10,2	XXX	71	118	12	0.28
10,3	XXX	71	118	12	0.28
10,4	XXX	71	118	12	0.28
10,5	XXX	71	118	12	0.28
10,6	XXX	71	118	12	0.28
10,7	XXX	71	118	12	0.28
10,8	XXX	71	118	12	0.28

Ø h7	122715	L_{tot}	< 1100 N f
	GARANT Master Steel SPEED solid carbide drill, plain shank DIN 6535 HA		
mm	TiAlN	mm	mm	mm	mm/rev.
10,9	XXX	71	118	12	0.28
11	XXX	71	118	12	0.28
11,1	XXX	71	118	12	0.28
11,2	XXX	71	118	12	0.28
11,3	XXX	71	118	12	0.28
11,35	XXX	71	118	12	0.28
11,4	XXX	71	118	12	0.28
11,5	XXX	71	118	12	0.28
11,6	XXX	71	118	12	0.28
11,7	XXX	71	118	12	0.28
11,8	XXX	71	118	12	0.28
11,9	XXX	71	118	12	0.28
12	XXX	71	118	12	0.28
12,2	XXX	77	124	14	0.31
12,5	XXX	77	124	14	0.31
12,8	XXX	77	124	14	0.31
13	XXX	77	124	14	0.31
13,2	XXX	77	124	14	0.31
13,5	XXX	77	124	14	0.31
13,8	XXX	77	124	14	0.31
14	XXX	77	124	14	0.31
14,2	XXX	83	133	16	0.34
14,5	XXX	83	133	16	0.34
14,8	XXX	83	133	16	0.34
15	XXX	83	133	16	0.34
15,1	XXX	83	133	16	0.34
15,2	XXX	83	133	16	0.34
15,25	XXX	83	133	16	0.34
15,5	XXX	83	133	16	0.34
15,8	XXX	83	133	16	0.34
16	XXX	83	133	16	0.34
16,2	XXX	93	143	18	0.35
16,5	XXX	93	143	18	0.35
16,8	XXX	93	143	18	0.35
17	XXX	93	143	18	0.35
17,2	XXX	93	143	18	0.35
17,5	XXX	93	143	18	0.35
17,8	XXX	93	143	18	0.35
18	XXX	93	143	18	0.35
18,2	XXX	101	153	20	0.38
18,5	XXX	101	153	20	0.38
18,8	XXX	101	153	20	0.38
19	XXX	101	153	20	0.38
19,2	XXX	101	153	20	0.38
19,5	XXX	101	153	20	0.38
19,8	XXX	101	153	20	0.38
20	XXX	101	153	20	0.38

Solid carbide | DIN 6537 | 6×D | h7 | 3 | 145° | h6 DIN 6535 HA | 25 bar | HPC

GARANT Master Steel FEED solid carbide drill

3-flute drill, specially developed for use at **very high feed rates**. Outstandingly suitable for **machines with high installed power** and stable operating conditions.

- Special cutter geometry with stable cutting edges and large clearance at the centre enables very high feed rates.
- The patented tip is optimised for chip flow and generates low cutting pressure with good chip breakage.
- With 145° tip angle for low burr formation when drilling through holes.

The **sector-leading technology of the chisel edge** guarantees **optimum self-centring behaviour** and permits spot drilling on irregular surfaces. 3 guide chamfers guarantee a stable exit from the hole and an exact roundness of the hole.

Recommendation: Maximum drilling depth: flute length (see table) less 1.5×nominal Ø.

Note:	Form HB and HE supplied at the same price as HA. Form **HB:** order with **No. 122726**. Form **HE:** order with **No. 122725 + 129100HE**.

Plain shank DIN 6535 HA 12 2725

Weldon shank DIN 6535 HB 12 2726

Whistle-Notch shank DIN 6535 HE 12 2725 + 12 9100HE

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG	GGG	Uni
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	M	M	S	K	K	
12 2725				160	140	130	110	90	60				60	50	40	130	80	●

Ø h7	11E 12 2725 GARANT Master Steel FEED solid carbide drill, plain shank DIN 6535 HA				< 1100 N
mm or inch	TiAlN	mm	L_{tot} mm	mm	f mm/rev.
4	XXX	36	74	6	0.28
4,1	XXX	36	74	6	0.28
4,2	XXX	36	74	6	0.28
4,3	XXX	36	74	6	0.28
4,4	XXX	36	74	6	0.28
4,5	XXX	36	74	6	0.28
4,6	XXX	36	74	6	0.28
4,65	XXX	36	74	6	0.28
4,7	XXX	36	74	6	0.28
3/16	XXX	44	82	6	0.28
4,8	XXX	44	82	6	0.28
4,9	XXX	44	82	6	0.28
5	XXX	44	82	6	0.28
5,1	XXX	44	82	6	0.32
5,2	XXX	44	82	6	0.32
5,3	XXX	44	82	6	0.32
5,4	XXX	44	82	6	0.32
5,5	XXX	44	82	6	0.32
5,55	XXX	44	82	6	0.32
7/32	XXX	44	82	6	0.32
5,6	XXX	44	82	6	0.32
5,7	XXX	44	82	6	0.32
5,8	XXX	44	82	6	0.32
5,9	XXX	44	82	6	0.32
6	XXX	44	82	6	0.32
6,1	XXX	53	91	8	0.37
6,2	XXX	53	91	8	0.37
6,3	XXX	53	91	8	0.37
1/4	XXX	53	91	8	0.37
6,35	XXX	53	91	8	0.37
6,4	XXX	53	91	8	0.37
6,5	XXX	53	91	8	0.37
6,6	XXX	53	91	8	0.37
6,7	XXX	53	91	8	0.37
6,8	XXX	53	91	8	0.37
6,9	XXX	53	91	8	0.37
7	XXX	53	91	8	0.37
7,1	XXX	53	91	8	0.37
9/32	XXX	53	91	8	0.37
7,2	XXX	53	91	8	0.37
7,3	XXX	53	91	8	0.37
7,4	XXX	53	91	8	0.37
7,45	XXX	53	91	8	0.37
7,5	XXX	53	91	8	0.37
7,6	XXX	53	91	8	0.37

Ø h7	11E 12 2725 GARANT Master Steel FEED solid carbide drill, plain shank DIN 6535 HA				< 1100 N
mm or inch	TiAlN	mm	L_{tot} mm	mm	f mm/rev.
7,7	XXX	53	91	8	0.37
7,8	XXX	53	91	8	0.37
7,9	XXX	53	91	8	0.37
5/16	XXX	53	91	8	0.37
8	XXX	53	91	8	0.37
8,1	XXX	61	103	10	0.44
8,2	XXX	61	103	10	0.44
8,3	XXX	61	103	10	0.44
8,4	XXX	61	103	10	0.44
8,5	XXX	61	103	10	0.44
8,6	XXX	61	103	10	0.44
8,7	XXX	61	103	10	0.44
11/32	XXX	61	103	10	0.44
8,8	XXX	61	103	10	0.44
8,9	XXX	61	103	10	0.44
9	XXX	61	103	10	0.44
9,1	XXX	61	103	10	0.44
9,2	XXX	61	103	10	0.44
9,3	XXX	61	103	10	0.44
9,35	XXX	61	103	10	0.44
9,4	XXX	61	103	10	0.44
9,5	XXX	61	103	10	0.44
3/8	XXX	61	103	10	0.44
9,55	XXX	61	103	10	0.44
9,6	XXX	61	103	10	0.44
9,7	XXX	61	103	10	0.44
9,8	XXX	61	103	10	0.44
9,9	XXX	61	103	10	0.44
10	XXX	61	103	10	0.44
10,1	XXX	71	118	12	0.5
10,2	XXX	71	118	12	0.5
10,3	XXX	71	118	12	0.5
13/32	XXX	71	118	12	0.5
10,4	XXX	71	118	12	0.5
10,5	XXX	71	118	12	0.5
10,6	XXX	71	118	12	0.5
10,7	XXX	71	118	12	0.5
10,8	XXX	71	118	12	0.5
10,9	XXX	71	118	12	0.5
11	XXX	71	118	12	0.5
11,1	XXX	71	118	12	0.5
7/16	XXX	71	118	12	0.5
11,2	XXX	71	118	12	0.5
11,3	XXX	71	118	12	0.5
11,4	XXX	71	118	12	0.5

Ø h7	11E 12 2725 GARANT Master Steel FEED solid carbide drill, plain shank DIN 6535 HA				< 1100 N
mm or inch	TiAlN	mm	L_{tot} mm	mm	f mm/rev.
11,5	XXX	71	118	12	0.5
11,6	XXX	71	118	12	0.5
11,7	XXX	71	118	12	0.5
11,8	XXX	71	118	12	0.5
11,9	XXX	71	118	12	0.5
12	XXX	71	118	12	0.5
12,2	XXX	77	124	14	0.56
12,5	XXX	77	124	14	0.56
1/2	XXX	77	124	14	0.56
12,7	XXX	77	124	14	0.56
12,8	XXX	77	124	14	0.56
13	XXX	77	124	14	0.56
13,2	XXX	77	124	14	0.56
13,5	XXX	77	124	14	0.56
13,8	XXX	77	124	14	0.56
14	XXX	77	124	14	0.56
14,2	XXX	83	133	16	0.61
9/16	XXX	83	133	16	0.61
14,5	XXX	83	133	16	0.61
14,8	XXX	83	133	16	0.61
15	XXX	83	133	16	0.61
15,1	XXX	83	133	16	0.61
15,2	XXX	83	133	16	0.61
15,25	XXX	83	133	16	0.61
15,5	XXX	83	133	16	0.61
15,8	XXX	83	133	16	0.61
5/8	XXX	83	133	16	0.61
16	XXX	83	133	16	0.61
16,2	XXX	93	143	18	0.66
16,5	XXX	93	143	18	0.66
16,8	XXX	93	143	18	0.66
17	XXX	93	143	18	0.66
17,2	XXX	93	143	18	0.66
17,5	XXX	93	143	18	0.66
17,8	XXX	93	143	18	0.66
18	XXX	93	143	18	0.66
18,2	XXX	101	153	20	0.69
18,5	XXX	101	153	20	0.69
18,8	XXX	101	153	20	0.69
19	XXX	101	153	20	0.69
19,2	XXX	101	153	20	0.69
19,5	XXX	101	153	20	0.69
19,8	XXX	101	153	20	0.69
20	XXX	101	153	20	0.69

Solid carbide | DIN 6537 | 6×D | p6 | 2 | 140° | h6 DIN 6535 HA | 25 bar | HPC

Garant

Solid carbide HPC pilot drill with 4 cooling channels

Cutting chisel edge with **high centring accuracy** due to **strong core and special point geometry.** High roundness and alignment accuracy of the deep hole, thanks to **4 guide chamfers.** Outstanding chip evacuation due to **4 internal cooling channels** from Ø 3.8 mm. Up to 3.7 mm Ø with 2 internal cooling channels. With **140° point angle** and special **j6 cutting edge tolerance** for optimum generation of a pilot hole.

Recommendation: Maximum drilling depth:
flute length (see table) less 1.5×nominal Ø.

Note: For deep-hole drilling deeper than 12×D a pilot hole is recommended, and for deep-hole drilling from 20×D to 30×D it is essential.
The generation of a pilot hole improves process reliability.
Form HB and HE supplied at the same price as HA.
Form **HB:** order with **No. 122738**.
Form **HE:** order with **No. 122736 + 129100HE**.

Plain shank DIN 6535 HA 122736

Weldon shank DIN 6535 HB 122738

Whistle-notch shank DIN 6535 HE 122736 + 129100HE

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	K						
122736				170	130	120	110	65						75	70		95	●		●	●		●

Ø p6	11E 12 2736 Solid carbide HPC drill plain shank DIN 6535 HA		L_{tot}		< 1100 N f	Ø p6	11E 12 2736 Solid carbide HPC drill plain shank DIN 6535 HA		L_{tot}		< 1100 N f
mm	TiAlN	mm	mm	mm	mm/rev.	mm	TiAlN	mm	mm	mm	mm/rev.
2	XXX	21	57	4	0.07	7	XXX	53	91	8	0.21
2,2	XXX	21	57	4	0.08	7,5	XXX	53	91	8	0.21
2,3	XXX	21	57	4	0.08	7,8	XXX	53	91	8	0.21
2,4	XXX	21	57	4	0.08	8	XXX	53	91	8	0.21
2,5	XXX	21	57	4	0.08	8,2	XXX	61	103	10	0.27
2,7	XXX	21	57	4	0.08	8,5	XXX	61	103	10	0.27
2,8	XXX	21	57	4	0.08	8,8	XXX	61	103	10	0.27
3	XXX	28	66	6	0.08	9	XXX	61	103	10	0.27
3,2	XXX	28	66	6	0.08	9,5	XXX	61	103	10	0.27
3,3	XXX	28	66	6	0.08	9,8	XXX	61	103	10	0.27
3,4	XXX	28	66	6	0.08	10	XXX	61	103	10	0.27
3,5	XXX	28	66	6	0.08	10,2	XXX	71	118	12	0.27
3,7	XXX	28	66	6	0.08	10,5	XXX	71	118	12	0.27
3,8	XXX	36	74	6	0.08	10,8	XXX	71	118	12	0.27
4	XXX	36	74	6	0.15	11	XXX	71	118	12	0.27
4,2	XXX	36	74	6	0.15	11,5	XXX	71	118	12	0.27
4,5	XXX	36	74	6	0.15	11,8	XXX	71	118	12	0.27
4,8	XXX	44	82	6	0.15	12	XXX	71	118	12	0.27
5	XXX	44	82	6	0.15	13	XXX	77	124	14	0.32
5,5	XXX	44	82	6	0.21	13,5	XXX	77	124	14	0.32
5,8	XXX	44	82	6	0.21	13,8	XXX	77	124	14	0.32
6	XXX	44	82	6	0.21	14	XXX	77	124	14	0.32
6,3	XXX	53	91	8	0.21	14,8	XXX	83	133	16	0.32
6,5	XXX	53	91	8	0.21	15,8	XXX	83	133	16	0.32
6,6	XXX	53	91	8	0.21	16	XXX	83	133	16	0.32
6,8	XXX	53	91	8	0.21	17,5	XXX	93	143	18	0.37

Solid carbide	DIN 6537	6×D	h7	2	140°	h6 DIN 6535 HA	25 bar	HPC

Garant

Solid carbide HPC drill

Cutting chisel edge with **high centring accuracy** due to **strong core and special point geometry.**
Convex cutting edges with honed edges and special flute profile for **short chips**, even on long chipping materials.

Recommendation: Maximum drilling depth:
Flute length (see table) less 1.5×nominal ∅.

Note:
Form HB and HE supplied at the same price as HA.
Form **HB:** order with **No. 122765**.
Form **HE:** order with **No. 122760 + 129100HE**.
NEW GENERATION AVAILABLE!
Recommended successor products are No. 122715 and 122725.

Plain shank DIN 6535 HA 12 2760

Weldon shank DIN 6535 HB 12 2765

Whistle-notch shank DIN 6535 HE 12 2760 + 12 9100HE

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	Uni
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	K	
12 2760				120	100	85	65	35	28					30		35	70	●

∅ h7	12 2760 Solid carbide HPC drill plain shank DIN 6535 HA				< 1100 N	
mm	TiAlN	mm	L_{tot} mm	mm	f mm/rev.	
1	XXX	8	55	4	0.03	
1,3	XXX	12	55	4	0.03	
1,4	XXX	12	55	4	0.03	
1,5	XXX	12	55	4	0.03	
1,6	XXX	16	55	4	0.03	
1,9	XXX	16	55	4	0.05	
2	XXX	21	57	4	0.05	
2,1	XXX	21	57	4	0.05	
2,2	XXX	21	57	4	0.07	
2,3	XXX	21	57	4	0.07	
2,4	XXX	21	57	4	0.07	
2,5	XXX	21	57	4	0.07	
2,6	XXX	21	57	4	0.07	
2,7	XXX	21	57	4	0.07	
2,8	XXX	21	57	4	0.11	
2,9	XXX	21	57	4	0.11	
3	XXX	28	66	6	0.11	
3,1	XXX	28	66	6	0.11	
3,2	XXX	28	66	6	0.11	
3,3	XXX	28	66	6	0.11	
3,4	XXX	28	66	6	0.11	
3,5	XXX	28	66	6	0.11	
3,7	XXX	28	66	6	0.11	
3,8	XXX	36	74	6	0.11	
3,9	XXX	36	74	6	0.11	
4	XXX	36	74	6	0.15	
4,1	XXX	36	74	6	0.15	
4,2	XXX	36	74	6	0.15	
4,3	XXX	36	74	6	0.15	
4,5	XXX	36	74	6	0.15	
4,6	XXX	36	74	6	0.15	
4,7	XXX	36	74	6	0.15	
4,8	XXX	44	82	6	0.15	
4,9	XXX	44	82	6	0.15	
5	XXX	44	82	6	0.15	
5,1	XXX	44	82	6	0.15	
5,2	XXX	44	82	6	0.15	
5,3	XXX	44	82	6	0.15	
5,5	XXX	44	82	6	0.15	
5,6	XXX	44	82	6	0.15	
5,8	XXX	44	82	6	0.15	
5,9	XXX	44	82	6	0.15	
6	XXX	44	82	6	0.2	
6,1	XXX	53	91	8	0.2	
6,2	XXX	53	91	8	0.2	
6,3	XXX	53	91	8	0.2	
6,4	XXX	53	91	8	0.2	
6,5	XXX	53	91	8	0.2	
6,6	XXX	53	91	8	0.2	

∅ h7	12 2760 Solid carbide HPC drill plain shank DIN 6535 HA				< 1100 N	
mm	TiAlN	mm	L_{tot} mm	mm	f mm/rev.	
6,8	XXX	53	91	8	0.2	
6,9	XXX	53	91	8	0.2	
7	XXX	53	91	8	0.2	
7,3	XXX	53	91	8	0.2	
7,5	XXX	53	91	8	0.2	
7,8	XXX	53	91	8	0.2	
7,9	XXX	53	91	8	0.2	
8	XXX	53	91	8	0.2	
8,1	XXX	61	103	10	0.2	
8,2	XXX	61	103	10	0.2	
8,5	XXX	61	103	10	0.2	
8,6	XXX	61	103	10	0.2	
8,7	XXX	61	103	10	0.2	
8,8	XXX	61	103	10	0.2	
9	XXX	61	103	10	0.27	
9,3	XXX	61	103	10	0.27	
9,4	XXX	61	103	10	0.27	
9,5	XXX	61	103	10	0.27	
9,8	XXX	61	103	10	0.27	
10	XXX	61	103	10	0.27	
10,2	XXX	71	118	12	0.27	
10,3	XXX	71	118	12	0.27	
10,5	XXX	71	118	12	0.27	
11	XXX	71	118	12	0.27	
11,5	XXX	71	118	12	0.27	
11,8	XXX	71	118	12	0.27	
12	XXX	71	118	12	0.32	
12,5	XXX	77	124	14	0.32	
13	XXX	77	124	14	0.32	
13,5	XXX	77	124	14	0.32	
13,8	XXX	77	124	14	0.32	
14	XXX	77	124	14	0.32	
14,2	XXX	83	133	16	0.32	
14,5	XXX	83	133	16	0.32	
14,8	XXX	83	133	16	0.32	
15	XXX	83	133	16	0.32	
15,2	XXX	83	133	16	0.32	
15,5	XXX	83	133	16	0.32	
15,8	XXX	83	133	16	0.32	
16	XXX	83	133	16	0.35	
16,5	XXX	93	143	18	0.35	
17	XXX	93	143	18	0.35	
17,5	XXX	93	143	18	0.35	
18	XXX	93	143	18	0.35	
18,5	XXX	101	153	20	0.35	
19	XXX	101	153	20	0.37	
19,5	XXX	101	153	20	0.37	
20	XXX	101	153	20	0.37	

Solid carbide | DIN 6537 | 6×D | m7 | 2 | 140° | h6 DIN 6535 HA

HOLEX Solid carbide high performance drill

Tool specially matched to drilling holes without through-coolant. **Concave major cutting edges** and a **special flute profile** ensure a good chip evacuation. The sturdy cutter geometry with **special point geometry** and 4 cutting edges ensures drilling with good process reliability. A wide range of applications in steel materials thanks to a combination of tough ultra-fine grain carbide and extremely **wear-resistant** and **heat-resistant coating.**

Recommendation: **Maximum drilling depth:**
Flute length (see table) less 1.5×nominal ∅.

Note:
Form HB and HE supplied at the same price as HA.
Form **HB:** order with **No. 122772**.
Form **HE:** order with **No. 122773**.

plain shank DIN 6535 HA 122771

Weldon shank DIN 6535 HB 122772

Whistle-Notch shank DIN 6535 HE 122773

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	GG	GGG	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	K	K						
122771		200	160	110	90	80	70	60								90	60	●		●		○	

∅ m7	12F 122771 Solid carbide drill plain shank DIN 6535 HA TiAlN					∅ m7	12F 122771 Solid carbide drill plain shank DIN 6535 HA TiAlN					∅ m7	12F 122771 Solid carbide drill plain shank DIN 6535 HA TiAlN				
mm or inch		mm	L_{tot} mm	mm	< 900 N f mm/rev.	mm or inch		mm	L_{tot} mm	mm	< 900 N f mm/rev.	mm or inch		mm	L_{tot} mm	mm	< 900 N f mm/rev.
1	XXX	8	55	3	0.05	5,3	XXX	44	82	6	0.18	9,35	XXX	61	103	10	0.2
1,1	XXX	12	55	3	0.05	5,4	XXX	44	82	6	0.18	9,4	XXX	61	103	10	0.2
1,2	XXX	12	55	3	0.05	5,5	XXX	44	82	6	0.18	9,5	XXX	61	103	10	0.2
1,3	XXX	12	55	3	0.05	5,55	XXX	44	82	6	0.18	3/8	XXX	61	103	10	0.2
1,4	XXX	12	55	3	0.05	7/32	XXX	44	82	6	0.18	9,6	XXX	61	103	10	0.2
1,5	XXX	16	55	3	0.05	5,6	XXX	44	82	6	0.18	9,7	XXX	61	103	10	0.2
1/16	XXX	16	55	3	0.05	5,7	XXX	44	82	6	0.18	9,8	XXX	61	103	10	0.2
1,6	XXX	16	55	3	0.05	5,8	XXX	44	82	6	0.18	9,9	XXX	61	103	10	0.2
1,7	XXX	16	55	3	0.05	5,9	XXX	44	82	6	0.18	10	XXX	61	103	10	0.2
1,8	XXX	16	55	3	0.05	6	XXX	44	82	6	0.18	10,2	XXX	71	118	12	0.2
1,9	XXX	16	55	3	0.05	6,1	XXX	53	91	8	0.18	10,3	XXX	71	118	12	0.2
2	XXX	21	57	4	0.07	6,2	XXX	53	91	8	0.18	13/32	XXX	71	118	12	0.2
2,1	XXX	21	57	4	0.07	6,3	XXX	53	91	8	0.18	10,5	XXX	71	118	12	0.2
2,2	XXX	21	57	4	0.07	6,35	XXX	53	91	8	0.18	10,8	XXX	71	118	12	0.2
2,3	XXX	21	57	4	0.07	1/4	XXX	53	91	8	0.18	11	XXX	71	118	12	0.2
3/32	XXX	21	57	4	0.07	6,4	XXX	53	91	8	0.18	7/16	XXX	71	118	12	0.2
2,4	XXX	21	57	4	0.07	6,5	XXX	53	91	8	0.18	11,2	XXX	71	118	12	0.2
2,5	XXX	21	57	4	0.07	6,6	XXX	53	91	8	0.18	11,5	XXX	71	118	12	0.2
2,6	XXX	21	57	4	0.07	6,7	XXX	53	91	8	0.18	11,8	XXX	71	118	12	0.2
2,7	XXX	21	57	4	0.07	6,8	XXX	53	91	8	0.18	12	XXX	71	118	12	0.2
2,8	XXX	21	57	4	0.07	6,9	XXX	53	91	8	0.18	12,2	XXX	77	124	14	0.26
2,9	XXX	21	57	4	0.07	7	XXX	53	91	8	0.18	12,5	XXX	77	124	14	0.26
3	XXX	28	66	6	0.16	7,1	XXX	53	91	8	0.18	12,7	XXX	77	124	14	0.26
3,1	XXX	28	66	6	0.16	9/32	XXX	53	91	8	0.18	1/2	XXX	77	124	14	0.26
1/8	XXX	28	66	6	0.16	7,2	XXX	53	91	8	0.18	12,8	XXX	77	124	14	0.26
3,2	XXX	28	66	6	0.16	7,3	XXX	53	91	8	0.18	13	XXX	77	124	14	0.26
3,3	XXX	28	66	6	0.16	7,4	XXX	53	91	8	0.18	13,2	XXX	77	124	14	0.26
3,4	XXX	28	66	6	0.16	7,45	XXX	53	91	8	0.18	13,5	XXX	77	124	14	0.26
3,5	XXX	28	66	6	0.16	7,5	XXX	53	91	8	0.18	13,8	XXX	77	124	14	0.26
3,6	XXX	28	66	6	0.16	7,6	XXX	53	91	8	0.18	14	XXX	77	124	14	0.26
3,7	XXX	28	66	6	0.16	7,7	XXX	53	91	8	0.18	14,2	XXX	83	133	16	0.26
3,8	XXX	36	74	6	0.16	7,8	XXX	53	91	8	0.18	9/16	XXX	83	133	16	0.26
3,9	XXX	36	74	6	0.16	7,9	XXX	53	91	8	0.18	14,5	XXX	83	133	16	0.26
5/32	XXX	36	74	6	0.16	5/16	XXX	53	91	8	0.18	14,8	XXX	83	133	16	0.26
4	XXX	36	74	6	0.16	8	XXX	53	91	8	0.18	15	XXX	83	133	16	0.26
4,1	XXX	36	74	6	0.16	8,1	XXX	61	103	10	0.2	15,1	XXX	83	133	16	0.26
4,2	XXX	36	74	6	0.16	8,2	XXX	61	103	10	0.2	15,2	XXX	83	133	16	0.26
4,3	XXX	36	74	6	0.16	8,3	XXX	61	103	10	0.2	15,5	XXX	83	133	16	0.26
4,4	XXX	36	74	6	0.16	8,4	XXX	61	103	10	0.2	15,8	XXX	83	133	16	0.26
4,5	XXX	36	74	6	0.16	8,5	XXX	61	103	10	0.2	5/8	XXX	83	133	16	0.26
4,6	XXX	36	74	6	0.16	8,6	XXX	61	103	10	0.2	16	XXX	83	133	16	0.26
4,65	XXX	36	74	6	0.16	8,7	XXX	61	103	10	0.2	16,5	XXX	93	143	18	0.28
4,7	XXX	36	74	6	0.16	11/32	XXX	61	103	10	0.2	17	XXX	93	143	18	0.28
3/16	XXX	44	82	6	0.16	8,8	XXX	61	103	10	0.2	17,5	XXX	93	143	18	0.28
4,8	XXX	44	82	6	0.16	8,9	XXX	61	103	10	0.2	18	XXX	93	143	18	0.28
4,9	XXX	44	82	6	0.16	9	XXX	61	103	10	0.2	18,5	XXX	101	153	20	0.28
5	XXX	44	82	6	0.16	9,1	XXX	61	103	10	0.2	19	XXX	101	153	20	0.28
5,1	XXX	44	82	6	0.18	9,2	XXX	61	103	10	0.2	19,5	XXX	101	153	20	0.28
5,2	XXX	44	82	6	0.18	9,3	XXX	61	103	10	0.2	20	XXX	101	153	20	0.28

Solid carbide | DIN 6537 | 6×D | h7 | 2 | 140° | h6 DIN 6535 HA | 25 bar

HOLEX Solid carbide high performance drill

12 2776 – **HOLEX Pro Steel:**
Straight major cutting edges and a **special flute profile** ensure good chip evacuation. The robust cutting edge geometry ensures high-performance drilling with good process reliability. A wide range of applications in steel materials thanks to a combination of tough ultra-fine grain carbide and extremely wear-resistant coating.
Up to Ø 1.9 with 4 facets, from Ø 2 with relieved cone.

Recommendation: Maximum drilling depth:
Flute length (see table) less 1.5×nominal Ø.

Note:

12 2630 – **NEW GENERATION AVAILABLE!**
Recommended successor product is No. 122776.

12 2776 – Version HB and HE supplied at the same price as HA.
Form **HB:** state **No. 122777**.
Form **HE:** state **No. 122778**.

Plain shank DIN 6535 HA 12 2776

Weldon shank DIN 6535 HB 12 2777

Whistle-Notch shank DIN 6535 HE 12 2778

Plain shank DIN 6535 HA 12 2630

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG	GGG	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	M	M	S	K	K						
12 2630		240		**110**	**90**	**80**	65	30					**35**	**30**	**30**			●		●	●		○
12 2776	250	200	160	**125**	**115**	**95**	**90**	**65**					**35**	30		**100**	**65**	●		●	●		

Ø h7	12F 12 2776	12E 12 2630						
	HOLEX Pro Steel solid carbide drill, plain shank	Solid carbide high performance drill plain shank						< 900 N
	DIN 6535 HA		12 2776	12 2630	12 2776	12 2630		12 2776
mm or inch	TiAlN	TiN	mm	mm	mm	mm	mm	mm/rev.
1	XXX	XXX	8	8	45	55	4	0.05
1,1	XXX	XXX	9	12	45	55	4	0.05
1,2	XXX	XXX	9.5	12	45	55	4	0.05
1,3	XXX	XXX	10.5	12	45	55	4	0.05
1,4	XXX	XXX	11	12	45	55	4	0.05
1,5	XXX	XXX	12	12	50	55	4	0.05
1/16	XXX	–	13	–	50	–	4	0.05
1,6	XXX	XXX	13	16	50	55	4	0.05
1,7	XXX	XXX	13.5	16	50	55	4	0.07
1,8	XXX	XXX	14.5	16	50	55	4	0.07
1,9	XXX	XXX	15	16	50	55	4	0.07
2	XXX	XXX	16	21	50	57	4	0.07
2,1	XXX	XXX	17	21	55	57	4	0.07
2,2	XXX	XXX	17.5	21	55	57	4	0.07
2,3	XXX	XXX	18.5	21	55	57	4	0.09
3/32	XXX	–	19	–	55	–	4	0.09
2,4	XXX	XXX	19	21	55	57	4	0.09
2,5	XXX	XXX	20	21	55	57	4	0.09
2,6	XXX	XXX	21	21	55	57	4	0.09
2,7	XXX	XXX	21.5	21	55	57	4	0.09
2,8	XXX	XXX	22.5	21	55	57	4	0.11
2,9	XXX	XXX	23	21	55	57	4	0.11
3	XXX	XXX	28	28	66	66	6	0.11
3,1	XXX	XXX	28	28	66	66	6	0.11
1/8	XXX	–	28	–	66	–	6	0.11
3,2	XXX	XXX	28	28	66	66	6	0.11

Ø h7	12F 12 2776	12E 12 2630						
	HOLEX Pro Steel solid carbide drill, plain shank	Solid carbide high performance drill plain shank						< 900 N
	DIN 6535 HA		12 2776	12 2630	12 2776	12 2630		12 2776
mm or inch	TiAlN	TiN	mm	mm	mm	mm	mm	mm/rev.
3,3	XXX	XXX	28	28	66	66	6	0.11
3,4	XXX	XXX	28	28	66	66	6	0.11
3,5	XXX	XXX	28	28	66	66	6	0.11
3,6	XXX	XXX	28	28	66	66	6	0.11
3,7	XXX	XXX	28	28	66	66	6	0.11
3,8	XXX	XXX	36	36	74	74	6	0.11
3,9	XXX	XXX	36	36	74	74	6	0.11
5/32	XXX	–	36	–	74	–	6	0.11
4	XXX	XXX	36	36	74	74	6	0.14
4,1	XXX	XXX	36	36	74	74	6	0.14
4,2	XXX	XXX	36	36	74	74	6	0.14
4,3	XXX	XXX	36	36	74	74	6	0.14
4,4	XXX	XXX	36	36	74	74	6	0.14
4,5	XXX	XXX	36	36	74	74	6	0.14
4,6	XXX	XXX	36	36	74	74	6	0.14
4,65	XXX	XXX	36	36	74	74	6	0.14
4,7	XXX	XXX	36	36	74	74	6	0.14
3/16	XXX	–	44	–	82	–	6	0.14
4,8	XXX	XXX	44	44	82	82	6	0.14
4,9	XXX	XXX	44	44	82	82	6	0.14
5	XXX	XXX	44	44	82	82	6	0.14
5,1	XXX	XXX	44	44	82	82	6	0.14
5,2	XXX	XXX	44	44	82	82	6	0.14
5,3	XXX	XXX	44	44	82	82	6	0.14
5,4	XXX	XXX	44	44	82	82	6	0.14
5,5	XXX	XXX	44	44	82	82	6	0.14

Ø h7	12F 12 2776	12E 12 2630							Ø h7	12F 12 2776	12E 12 2630						
	HOLEX Pro Steel solid carbide drill, plain shank	Solid carbide high performance drill plain shank						< 900 N f		HOLEX Pro Steel solid carbide drill, plain shank	Solid carbide high performance drill plain shank						< 900 N f
	DIN 6535 HA		12 2776	12 2630	12 2776	12 2630		12 2776		DIN 6535 HA		12 2776	12 2630	12 2776	12 2630		12 2776
mm or inch	TiAlN	TiN	mm	mm	mm	mm	mm	mm/rev.	mm or inch	TiAlN	TiN	mm	mm	mm	mm	mm	mm/rev.
5,55	XXX	XXX	44	44	82	82	6	0.14	10,5	XXX	XXX	71	71	118	118	12	0.22
7/32	XXX	–	44	–	82	–	6	0.14	10,6	XXX	–	71	–	118	–	12	0.22
5,6	XXX	XXX	44	44	82	82	6	0.14	10,7	XXX	–	71	–	118	–	12	0.22
5,7	XXX	XXX	44	44	82	82	6	0.14	10,8	XXX	XXX	71	71	118	118	12	0.22
5,8	XXX	XXX	44	44	82	82	6	0.14	10,9	XXX	–	71	–	118	–	12	0.22
5,9	XXX	XXX	44	44	82	82	6	0.14	11	XXX	XXX	71	71	118	118	12	0.22
6	XXX	XXX	44	44	82	82	6	0.14	11,1	XXX	–	71	–	118	–	12	0.22
6,1	XXX	XXX	53	53	91	91	8	0.18	7/16	XXX	–	71	–	118	–	12	0.22
6,2	XXX	XXX	53	53	91	91	8	0.18	11,2	XXX	XXX	71	71	118	118	12	0.22
6,3	XXX	XXX	53	53	91	91	8	0.18	11,3	XXX	–	71	–	118	–	12	0.22
1/4	XXX	–	53	–	91	–	8	0.18	11,4	XXX	–	71	–	118	–	12	0.22
6,35	XXX	–	53	–	91	–	8	0.18	11,5	XXX	XXX	71	71	118	118	12	0.22
6,4	XXX	XXX	53	53	91	91	8	0.18	11,6	XXX	–	71	–	118	–	12	0.22
6,5	XXX	XXX	53	53	91	91	8	0.18	11,7	XXX	–	71	–	118	–	12	0.22
6,6	XXX	XXX	53	53	91	91	8	0.18	11,8	XXX	XXX	71	71	118	118	12	0.22
6,7	XXX	XXX	53	53	91	91	8	0.18	11,9	XXX	–	71	–	118	–	12	0.22
6,8	XXX	XXX	53	53	91	91	8	0.18	12	XXX	XXX	71	71	118	118	12	0.22
6,9	XXX	XXX	53	53	91	91	8	0.18	12,2	XXX	XXX	77	77	124	124	14	0.26
7	XXX	XXX	53	53	91	91	8	0.18	12,5	XXX	XXX	77	77	124	124	14	0.26
7,1	XXX	–	53	–	91	–	8	0.18	1/2	XXX	–	77	–	124	–	14	0.26
9/32	XXX	–	53	–	91	–	8	0.18	12,7	XXX	–	77	–	124	–	14	0.26
7,2	XXX	–	53	–	91	–	8	0.18	12,8	XXX	XXX	77	77	124	124	14	0.26
7,3	XXX	–	53	–	91	–	8	0.18	13	XXX	XXX	77	77	124	124	14	0.26
7,4	XXX	XXX	53	53	91	91	8	0.18	13,1	XXX	XXX	77	77	124	124	14	0.26
7,45	XXX	XXX	53	53	91	91	8	0.18	13,2	XXX	–	77	–	124	–	14	0.26
7,5	XXX	XXX	53	53	91	91	8	0.18	13,5	XXX	XXX	77	77	124	124	14	0.26
7,6	XXX	–	53	–	91	–	8	0.18	13,8	XXX	XXX	77	77	124	124	14	0.26
7,7	XXX	–	53	–	91	–	8	0.18	14	XXX	XXX	77	77	124	124	14	0.26
7,8	XXX	XXX	53	53	91	91	8	0.18	14,2	XXX	XXX	83	83	133	133	16	0.26
7,9	XXX	XXX	53	53	91	91	8	0.18	9/16	XXX	–	83	–	133	–	16	0.26
5/16	XXX	–	53	–	91	–	8	0.18	14,5	XXX	XXX	83	83	133	133	16	0.26
8	XXX	XXX	53	53	91	91	8	0.18	14,8	XXX	XXX	83	83	133	133	16	0.26
8,1	XXX	XXX	61	61	103	103	10	0.2	15	XXX	XXX	83	83	133	133	16	0.26
8,2	XXX	XXX	61	61	103	103	10	0.2	19/32	XXX	–	83	–	133	–	16	0.26
8,3	XXX	XXX	61	61	103	103	10	0.2	15,1	XXX	XXX	83	83	133	133	16	0.26
8,4	XXX	–	61	–	103	–	10	0.2	15,2	XXX	–	83	–	133	–	16	0.26
8,5	XXX	XXX	61	61	103	103	10	0.2	15,5	XXX	XXX	83	83	133	133	16	0.26
8,6	XXX	XXX	61	61	103	103	10	0.2	15,8	XXX	XXX	83	83	133	133	16	0.26
8,7	XXX	XXX	61	61	103	103	10	0.2	5/8	XXX	–	83	–	133	–	16	0.26
11/32	XXX	–	61	–	103	–	10	0.2	16	XXX	XXX	83	83	133	133	16	0.26
8,8	XXX	XXX	61	61	103	103	10	0.2	16,2	XXX	–	93	–	143	–	18	0.28
8,9	XXX	–	61	–	103	–	10	0.2	16,5	XXX	XXX	93	93	143	143	18	0.28
9	XXX	XXX	61	61	103	103	10	0.2	21/32	XXX	–	93	–	143	–	18	0.28
9,1	XXX	XXX	61	61	103	103	10	0.22	16,8	XXX	–	93	–	143	–	18	0.28
9,2	XXX	–	61	–	103	–	10	0.22	17	XXX	XXX	93	93	143	143	18	0.28
9,3	XXX	XXX	61	61	103	103	10	0.22	17,2	XXX	–	93	–	143	–	18	0.28
9,35	XXX	XXX	61	61	103	103	10	0.22	11/16	XXX	–	93	–	143	–	18	0.28
9,4	XXX	XXX	61	61	103	103	10	0.22	17,5	XXX	XXX	93	93	143	143	18	0.28
9,5	XXX	XXX	61	61	103	103	10	0.22	17,8	XXX	XXX	93	93	143	143	18	0.28
3/8	XXX	–	61	–	103	–	10	0.22	18	XXX	XXX	93	93	143	143	18	0.28
9,6	XXX	XXX	61	61	103	103	10	0.22	18,2	XXX	–	101	–	153	–	20	0.28
9,7	XXX	–	61	–	103	–	10	0.22	18,5	XXX	XXX	101	101	153	153	20	0.28
9,8	XXX	XXX	61	61	103	103	10	0.22	18,8	XXX	–	101	–	153	–	20	0.28
9,9	XXX	XXX	61	61	103	103	10	0.22	19	XXX	XXX	101	101	153	153	20	0.28
10	XXX	XXX	61	61	103	103	10	0.22	3/4	XXX	–	101	–	153	–	20	0.28
10,1	XXX	–	71	–	118	–	12	0.22	19,05	XXX	–	101	–	153	–	20	0.28
10,2	XXX	XXX	71	71	118	118	12	0.22	19,2	XXX	–	101	–	153	–	20	0.28
10,3	XXX	XXX	71	71	118	118	12	0.22	19,5	XXX	XXX	101	101	153	153	20	0.28
13/32	XXX	–	71	–	118	–	12	0.22	19,8	XXX	–	101	–	153	–	20	0.28
10,4	XXX	–	71	–	118	–	12	0.22	20	XXX	XXX	101	101	153	153	20	0.28

H7	Solid carbide	DIN 6537	6×D	2	140°	h6 DIN 6535 HA	25 bar	HPC

Garant Solid carbide HPC precision drills for H7 fit

Drilling and reaming in a single operation. Cutting chisel edge with **high centring accuracy** due to **strong core and special point geometry.** Particularly high alignment accuracy due to **4 guide chamfers.**

Advantage: Very tight **manufacturing tolerances** with **H7 fit** can be produced without additional reaming.

Recommendation: **Maximum drilling depth:** Flute length (see table) less 1.5×nominal Ø.

Note:
Form HB and HE supplied at the same price as HA.
Form **HB:** order with **No. 122790 + 129100HB** .
Form **HE:** order with **No. 122790 + 129100HE**.
Solid carbide precision fit drills for machining aluminium available on request.

Plain shank DIN 6535 HA 12 2790

Weldon shank DIN 6535 HB 12 2790 + 12 9100 HB

Whistle-Notch shank DIN 6535 HE 12 2790 + 12 9100 HE

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	Graphite GRP CRP	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	N						
12 2790				120	100	85	60							35	30			●	●				○

Ø	11E 12 2790 Solid carbide HPC drill plain shank DIN 6535 HA H7		L_{tot}		< 900 N f
mm	TiAlN	mm	mm	mm	mm/rev.
3H7	XXX	28	66	6	0.09
3,98	XXX	36	74	6	0.12
3,99	XXX	36	74	6	0.12
4H7	XXX	36	74	6	0.12
4,01	XXX	36	74	6	0.12
4,02	XXX	36	74	6	0.12
4,98	XXX	44	82	6	0.16
4,99	XXX	44	82	6	0.16
5H7	XXX	44	82	6	0.16
5,01	XXX	44	82	6	0.16
5,02	XXX	44	82	6	0.16
5,98	XXX	44	82	6	0.16
5,99	XXX	44	82	6	0.16
6H7	XXX	44	82	6	0.16
6,01	XXX	44	82	6	0.16
6,02	XXX	44	82	6	0.16
7H7	XXX	53	91	8	0.22
7,98	XXX	53	91	8	0.22
7,99	XXX	53	91	8	0.22
8H7	XXX	53	91	8	0.22
8,01	XXX	53	91	8	0.22
8,02	XXX	53	91	8	0.22
9H7	XXX	61	103	10	0.28
9,98	XXX	61	103	10	0.28
9,99	XXX	61	103	10	0.28
10H7	XXX	61	103	10	0.28
10,01	XXX	61	103	10	0.28
10,02	XXX	61	103	10	0.28
12H7	XXX	71	118	12	0.34
14H7	XXX	77	124	14	0.34

Solid carbide | Standard | 5×D | m7 | 2 | 180° | h6 DIN 6535 HA | 25 bar

Garant

Solid carbide drill 180°

Special point geometry for generating **180° flat-bottomed holes.** Low radial forces even when spot drilling on faces with up to 15° slope. Flute geometry for optimum chip evacuation. With 4 guide chamfers to stabilise the drill in the hole.

Advantage: **The 180° point angle** permits drilling and counterboring in a single operation.

Recommendation: **Maximum drilling depth:**
flute length (see table) less 1.5×nominal Ø.When using the solid carbide 180° drill it is absolutely essential for process reliability:

- **when spot drilling on flat surfaces** to drill a pilot hole 1×D using pilot drill No. 122736.
- **when spot drilling on sloping surfaces** up to max. 15° : reduce the feed rate f **to 25%** of the stated value. **After spot drilling**, the **normal feed rate value** can be used.

Note:
Form HB and HE supplied at the same price as HA.
Form **HB:** order with **No. 122793 + 129100HB** .
Form **HE:** order with **No. 122793 + 129100HE**.
180° solid carbide drills for machining aluminium available on request.
Not suitable for generating counterbores for socket-head screws to DIN974-1.

Plain shank DIN 6535 HA 122793

Weldon shank DIN 6535 HB 122793 + 129100HB

Whistle-Notch shank DIN 6535 HE 122793 + 129100HE

With cutting edge chamfer (= 5 % of the nominal Ø)

Pilot drill

122736

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	K						
122793				85	75	60	45							45	40		90	●		●	●		●

Ø m7	11E	122793	L_{tot}	< 900 N f
		Solid carbide drill plain shank DIN 6535 HA 180°		
mm		TiAlN	mm	mm	mm	mm/rev.
3		XXX	28	66	6	0.05
3,1		(XXX)	28	66	6	0.05
3,2		XXX	28	66	6	0.05
3,3		(XXX)	28	66	6	0.05
3,4		(XXX)	28	66	6	0.05
3,5		XXX	28	66	6	0.05
3,6		(XXX)	28	66	6	0.05
3,7		(XXX)	28	66	6	0.05
3,8		XXX	36	74	6	0.05
3,9		(XXX)	36	74	6	0.05
4		XXX	36	74	6	0.08
4,1		(XXX)	36	74	6	0.08
4,2		XXX	36	74	6	0.08
4,3		(XXX)	36	74	6	0.08
4,4		(XXX)	36	74	6	0.08
4,5		XXX	36	74	6	0.08
4,6		(XXX)	36	74	6	0.08
4,65		(XXX)	36	74	6	0.08
4,7		(XXX)	36	74	6	0.08
4,8		XXX	44	82	6	0.08
4,9		(XXX)	44	82	6	0.08
5		XXX	44	82	6	0.12
5,1		(XXX)	44	82	6	0.12
5,2		(XXX)	44	82	6	0.12
5,3		(XXX)	44	82	6	0.12
5,4		(XXX)	44	82	6	0.12
5,5		XXX	44	82	6	0.12
5,55		(XXX)	44	82	6	0.12
5,6		(XXX)	44	82	6	0.12
5,7		(XXX)	44	82	6	0.12
5,8		XXX	44	82	6	0.12
5,9		(XXX)	44	82	6	0.12
6		XXX	44	82	6	0.12
6,1		(XXX)	53	91	8	0.12
6,2		(XXX)	53	91	8	0.12
6,3		(XXX)	53	91	8	0.12
6,4		(XXX)	53	91	8	0.12
6,5		XXX	53	91	8	0.12
6,6		(XXX)	53	91	8	0.12

Ø m7	11E	122793	L_{tot}	< 900 N f
		Solid carbide drill plain shank DIN 6535 HA 180°		
mm		TiAlN	mm	mm	mm	mm/rev.
6,7		(XXX)	53	91	8	0.12
6,8		XXX	53	91	8	0.12
6,9		(XXX)	53	91	8	0.12
7		XXX	53	91	8	0.12
7,1		(XXX)	53	91	8	0.12
7,2		(XXX)	53	91	8	0.12
7,3		(XXX)	53	91	8	0.12
7,4		(XXX)	53	91	8	0.12
7,5		XXX	53	91	8	0.12
7,6		(XXX)	53	91	8	0.12
7,7		(XXX)	53	91	8	0.12
7,8		XXX	53	91	8	0.12
7,9		(XXX)	53	91	8	0.12
8		XXX	53	91	8	0.12
8,1		(XXX)	61	103	10	0.15
8,2		(XXX)	61	103	10	0.15
8,3		(XXX)	61	103	10	0.15
8,4		(XXX)	61	103	10	0.15
8,5		XXX	61	103	10	0.15
8,6		(XXX)	61	103	10	0.15
8,7		(XXX)	61	103	10	0.15
8,8		(XXX)	61	103	10	0.15
8,9		(XXX)	61	103	10	0.15
9		XXX	61	103	10	0.15
9,1		(XXX)	61	103	10	0.15
9,2		(XXX)	61	103	10	0.15
9,3		(XXX)	61	103	10	0.15
9,4		(XXX)	61	103	10	0.15
9,5		XXX	61	103	10	0.15
9,6		(XXX)	61	103	10	0.15
9,7		(XXX)	61	103	10	0.15
9,8		(XXX)	61	103	10	0.15
9,9		(XXX)	61	103	10	0.15
10		XXX	61	103	10	0.15
10,1		(XXX)	69	116	12	0.15
10,2		XXX	69	116	12	0.15
10,3		(XXX)	69	116	12	0.15
10,4		(XXX)	69	116	12	0.15
10,5		XXX	69	116	12	0.15

Ø m7	11E	122793	L_{tot}	< 900 N f
		Solid carbide drill plain shank DIN 6535 HA 180°		
mm		TiAlN	mm	mm	mm	mm/rev.
10,6		(XXX)	69	116	12	0.15
10,7		(XXX)	69	116	12	0.15
10,8		(XXX)	69	116	12	0.15
10,9		(XXX)	69	116	12	0.15
11		XXX	69	116	12	0.15
11,1		(XXX)	69	116	12	0.15
11,2		(XXX)	69	116	12	0.15
11,3		(XXX)	69	116	12	0.15
11,4		(XXX)	69	116	12	0.15
11,5		(XXX)	69	116	12	0.15
11,6		(XXX)	69	116	12	0.15
11,7		(XXX)	69	116	12	0.15
11,8		XXX	69	116	12	0.15
11,9		(XXX)	69	116	12	0.15
12		XXX	69	116	12	0.15
12,5		XXX	75	122	14	0.16
12,8		(XXX)	75	122	14	0.16
13		XXX	75	122	14	0.16
13,5		(XXX)	75	122	14	0.16
13,8		(XXX)	75	122	14	0.16
14		XXX	75	122	14	0.16
14,5		(XXX)	81	131	16	0.16
14,8		(XXX)	81	131	16	0.16
15		XXX	81	131	16	0.16
15,5		(XXX)	81	131	16	0.16
15,8		(XXX)	81	131	16	0.16
16		XXX	81	131	16	0.16
16,5		XXX	91	141	18	0.2
16,8		(XXX)	91	141	18	0.2
17		(XXX)	91	141	18	0.2
17,5		XXX	91	141	18	0.2
17,8		(XXX)	91	141	18	0.2
18		XXX	91	141	18	0.2
18,5		(XXX)	99	151	20	0.2
18,8		(XXX)	99	151	20	0.2
19		XXX	99	151	20	0.2
19,5		(XXX)	99	151	20	0.2
19,8		(XXX)	99	151	20	0.2
20		XXX	99	151	20	0.23

Solid carbide | Standard | 5×D | 2 | 140° | h6 DIN 6535 HA | 25 bar | H7 | ±0,003

Solid carbide drill-reamer

Drilling and reaming in a single operation. Very high concentricity. With **4 reaming cutting edges** for optimum dimensional accuracy and surface quality as good as reaming.

Recommendation: Maximum drilling depth: flute length (see table) less 1.5×nominal Ø.

Note: Form HB and HE supplied at the same price as HA.
Form **HB:** order with **No. 122795 + 129100HB** .
Form **HE:** order with **No. 122795 + 129100HE**.

Plain shank DIN 6535 HA 12 2795

Weldon shank DIN 6535HB 12 2795 + 12 9100HB

Whistle-Notch shank DIN 6535HE 12 2795 + 12 9100HE

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	Graphite GRP CRP					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	K	N					
12 2795		80	80	65	60	55	35										60			●	●		●

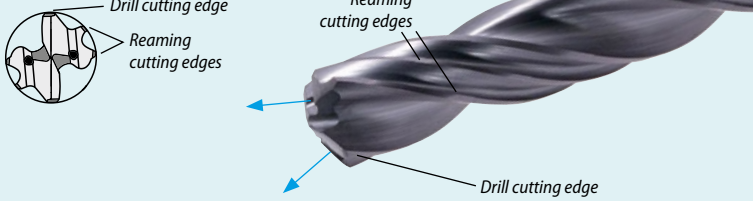
Ø mm	12 2795 TiAlN	Tolerance	mm	L_{tot} mm	mm	< 900 N f mm/rev.
	Solid carbide drill-reamer with plain shank DIN 6535 HA					
3,98	XXX	H7	36	74	6	0.14
3,99	XXX	H7	36	74	6	0.14
4	XXX	H7	36	74	6	0.14
4,01	XXX	H7	36	74	6	0.14
4,02	XXX	H7	36	74	6	0.14
4,03	XXX	±0.003	36	74	6	0.14
4,5	XXX	H7	36	74	6	0.14
4,98	XXX	H7	44	82	6	0.17
4,99	XXX	H7	44	82	6	0.17
5	XXX	H7	44	82	6	0.17
5,01	XXX	H7	44	82	6	0.17
5,02	XXX	H7	44	82	6	0.17
5,5	XXX	H7	53	91	6	0.17
5,97	(XXX)	±0.003	53	91	6	0.17
5,98	XXX	H7	53	91	6	0.19
5,99	XXX	H7	53	91	6	0.19
6	XXX	H7	53	91	6	0.19
6,01	XXX	H7	53	91	6	0.19
6,02	XXX	H7	53	91	6	0.19
6,03	XXX	±0.003	53	91	6	0.19
6,32	(XXX)	±0.003	53	91	8	0.19
6,33	(XXX)	±0.003	53	91	8	0.19
6,34	(XXX)	±0.003	53	91	8	0.19
6,35	(XXX)	±0.003	53	91	8	0.19
6,36	(XXX)	±0.003	53	91	8	0.19
6,37	(XXX)	±0.003	53	91	8	0.19
6,5	XXX	H7	53	91	8	0.19
7	XXX	H7	53	91	8	0.19
7,97	(XXX)	±0.003	53	91	8	0.19
7,98	XXX	H7	53	91	8	0.23
7,99	XXX	H7	53	91	8	0.23
8	XXX	H7	53	91	8	0.23

Ø mm	12 2795 TiAlN	Tolerance	mm	L_{tot} mm	mm	< 900 N f mm/rev.
	Solid carbide drill-reamer with plain shank DIN 6535 HA					
8,01	XXX	H7	53	91	8	0.23
8,02	XXX	H7	53	91	8	0.23
9	XXX	H7	61	103	10	0.23
9,48	(XXX)	±0.003	61	103	10	0.23
9,49	(XXX)	±0.003	61	103	10	0.23
9,5	(XXX)	±0.003	61	103	10	0.23
9,52	(XXX)	±0.003	61	103	10	0.23
9,53	(XXX)	±0.003	61	103	10	0.23
9,54	(XXX)	±0.003	61	103	10	0.23
9,97	(XXX)	±0.003	61	103	10	0.23
9,98	XXX	H7	61	103	10	0.28
9,99	XXX	H7	61	103	10	0.28
10	XXX	H7	61	103	10	0.28
10,01	XXX	H7	61	103	10	0.28
10,02	XXX	H7	61	103	10	0.28
11,97	(XXX)	±0.003	71	118	12	0.32
11,98	XXX	H7	71	118	12	0.32
11,99	XXX	H7	71	118	12	0.32
12	XXX	H7	71	118	12	0.32
12,01	XXX	H7	71	118	12	0.32
12,02	XXX	H7	71	118	12	0.32
12,67	(XXX)	±0.003	77	124	14	0.32
12,68	(XXX)	±0.003	77	124	14	0.32
12,69	(XXX)	±0.003	77	124	14	0.32
12,7	(XXX)	±0.003	77	124	14	0.32
12,71	(XXX)	±0.003	77	124	14	0.32
12,72	(XXX)	±0.003	77	124	14	0.32
13	XXX	H7	77	124	14	0.32
14	XXX	H7	77	124	14	0.35
15	XXX	H7	83	133	16	0.35
16	XXX	H7	83	133	16	0.35

Drilling and reaming in a single operation

The GARANT solid carbide drill-reamer 12 2795 efficiently combines **two operations**. **Drilling into solid and at the same time finish machining** by the 4 reaming cutting edges of the tool creates optimum dimensional accuracy and surface quality.

Elimination of the usual separate reaming process significantly reduces both direct production times and ancillary production times.
In addition the geometry of the cutting edges and guide lands permits precise and economical regrinding.



Solid carbide | Standard | 8×D | Type W | h7 | 2 | 135° | h6 DIN 6535 HA | 25 bar | HPC

Garant

Solid carbide HPC drill

DLC coating sp² of the latest generation with **low coefficient of friction** results in **outstanding chip clearance.** For **high-performance milling** of **aluminium materials**. **High roundness** and **alignment accuracy of the deep hole**, thanks to **6 guide chamfers.**

Recommendation: Maximum drilling depth:
flute length (see table) less 1.5×nominal ∅.

Note:
Form HB and HE supplied at the same price as HA.
Form **HB:** order with **No. 122809**.
Form **HE:** order with **No. 122808 + 129100HE**.

Plain shank DIN 6535 HA 12 2808

Weldon shank DIN 6535 HB 12 2809

Whistle-notch shank DIN 6535 HE 12 2808 + 12 9100HE

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	PMMA acrylic	PE-HD	PA 66	PEEK	PF 31	AFRP aramid	PVDF GF20	POM GF25	PA 66 GF30	PEEK GF30	PTFE CF25	Cu	CuZn	GRP	CRP					
ISO code	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N					
12 2808	325	360	315	135			110			80		70	60	70	140	160	70	70		●	●		

∅ h7	11E	12 2808					∅ h7	11E	12 2808				
		Solid carbide HPC drill, plain shank DIN 6535 HA		L_{tot}		Alu f			Solid carbide HPC drill, plain shank DIN 6535 HA		L_{tot}		Alu f
mm		DLC	mm	mm	mm	mm/rev.	mm		DLC	mm	mm	mm	mm/rev.
2		XXX	25	66	4	0.2	7,6		XXX	76	114	8	0.45
2,1		XXX	25	66	4	0.22	7,7		XXX	76	114	8	0.45
2,2		XXX	25	66	4	0.22	7,8		XXX	76	114	8	0.45
2,3		XXX	25	66	4	0.22	7,9		XXX	76	114	8	0.45
2,4		XXX	30	66	4	0.22	8		XXX	76	114	8	0.45
2,5		XXX	30	66	4	0.22	8,1		XXX	95	142	10	0.55
2,6		XXX	30	66	4	0.22	8,2		XXX	95	142	10	0.55
2,7		XXX	30	66	4	0.22	8,3		XXX	95	142	10	0.55
2,8		XXX	30	66	4	0.22	8,4		XXX	95	142	10	0.55
2,9		XXX	30	66	4	0.22	8,5		XXX	95	142	10	0.55
3		XXX	34	72	6	0.22	8,6		XXX	95	142	10	0.55
3,1		XXX	34	72	6	0.35	8,7		XXX	95	142	10	0.55
3,2		XXX	34	72	6	0.35	8,8		XXX	95	142	10	0.55
3,3		XXX	34	72	6	0.35	8,9		XXX	95	142	10	0.55
3,4		XXX	34	72	6	0.35	9		XXX	95	142	10	0.55
3,5		XXX	34	72	6	0.35	9,1		XXX	95	142	10	0.55
3,6		XXX	34	72	6	0.35	9,2		XXX	95	142	10	0.55
3,7		XXX	34	72	6	0.35	9,3		XXX	95	142	10	0.55
3,8		XXX	43	81	6	0.35	9,4		XXX	95	142	10	0.55
3,9		XXX	43	81	6	0.35	9,5		XXX	95	142	10	0.55
4		XXX	43	81	6	0.35	9,6		XXX	95	142	10	0.55
4,1		XXX	43	81	6	0.35	9,7		XXX	95	142	10	0.55
4,2		XXX	43	81	6	0.35	9,8		XXX	95	142	10	0.55
4,3		XXX	43	81	6	0.35	9,9		XXX	95	142	10	0.55
4,4		XXX	43	81	6	0.35	10		XXX	95	142	10	0.55
4,5		XXX	43	81	6	0.35	10,2		XXX	114	162	12	0.55
4,6		XXX	43	81	6	0.35	10,5		XXX	114	162	12	0.55
4,7		XXX	43	81	6	0.35	10,8		XXX	114	162	12	0.55
4,8		XXX	57	95	6	0.35	11		XXX	114	162	12	0.55
4,9		XXX	57	95	6	0.35	11,5		XXX	114	162	12	0.55
5		XXX	57	95	6	0.35	11,8		XXX	114	162	12	0.55
5,1		XXX	57	95	6	0.45	12		XXX	114	162	12	0.55
5,2		XXX	57	95	6	0.45	12,5		XXX	131	178	14	0.65
5,3		XXX	57	95	6	0.45	12,8		XXX	131	178	14	0.65
5,4		XXX	57	95	6	0.45	13		XXX	131	178	14	0.65
5,5		XXX	57	95	6	0.45	13,5		XXX	131	178	14	0.65
5,6		XXX	57	95	6	0.45	13,8		XXX	131	178	14	0.65
5,7		XXX	57	95	6	0.45	14		XXX	131	178	14	0.65
5,8		XXX	57	95	6	0.45	14,5		XXX	152	203	16	0.65
5,9		XXX	57	95	6	0.45	14,8		XXX	152	203	16	0.65
6		XXX	57	95	6	0.45	15		XXX	152	203	16	0.65
6,1		XXX	76	114	8	0.45	15,5		XXX	152	203	16	0.65
6,2		XXX	76	114	8	0.45	15,8		XXX	152	203	16	0.65
6,3		XXX	76	114	8	0.45	16		XXX	152	203	16	0.65
6,4		XXX	76	114	8	0.45	16,5		XXX	171	222	18	0.7
6,5		XXX	76	114	8	0.45	16,8		XXX	171	222	18	0.7
6,6		XXX	76	114	8	0.45	17		XXX	171	222	18	0.7
6,7		XXX	76	114	8	0.45	17,5		XXX	171	222	18	0.7
6,8		XXX	76	114	8	0.45	17,8		XXX	171	222	18	0.7
6,9		XXX	76	114	8	0.45	18		XXX	171	222	18	0.7
7		XXX	76	114	8	0.45	18,5		XXX	190	243	20	0.7
7,1		XXX	76	114	8	0.45	18,8		XXX	190	243	20	0.7
7,2		XXX	76	114	8	0.45	19		XXX	190	243	20	0.7
7,3		XXX	76	114	8	0.45	19,5		XXX	190	243	20	0.7
7,4		XXX	76	114	8	0.45	19,8		XXX	190	243	20	0.7
7,5		XXX	76	114	8	0.45	20		XXX	190	243	20	0.7

Solid carbide | Standard | 8×D | m6 | 2 | 140° | h6 DIN 6535 HA | 25 bar | HPC

Garant

Solid carbide HPC drill with 4 cooling channels

Cutting chisel edge with **high centring accuracy** due to **strong core and special point geometry.** High roundness and alignment accuracy of the deep hole, thanks to **4 guide chamfers.** Outstanding chip evacuation due to **4 internal cooling channels** from ∅ 3.8 mm. Up to 3.7 mm ∅ with 2 internal cooling channels. **Straight major cutting edges** with honed edges and special flute profile for **short chips**, even on long chipping materials.

Recommendation: Maximum drilling depth:
Flute length (see table) less 1.5×nominal ∅.

Note:	Form HB and HE supplied at the same price as HA. Form **HB:** order with **No. 123010**. Form **HE:** order with **No. 123008 + 129100HE**.

Plain shank DIN 6535 HA 12 3008

Weldon shank DIN 6535 HB 12 3010

Whistle-Notch shank DIN 6535 HE 12 3008 + 12 9100HE

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	Graphite GRP CRP	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	N						
12 3008				90	75	70	55	32						70	60			●		●	●		

∅ m6	12 3008		L_{tot}		INOX > 900 N	∅ m6	12 3008		L_{tot}		INOX > 900 N
	Solid carbide HPC drill plain shank DIN 6535 HA				f		Solid carbide HPC drill plain shank DIN 6535 HA				f
mm or inch	TiAlN	mm	mm	mm	mm/rev.	mm or inch	TiAlN	mm	mm	mm	mm/rev.
3	XXX	34	72	6	0.06	11/32	XXX	95	142	10	0.15
3,3	XXX	34	72	6	0.06	8,8	XXX	95	142	10	0.15
3,4	XXX	34	72	6	0.06	9	XXX	95	142	10	0.15
3,5	XXX	34	72	6	0.06	9,1	XXX	95	142	10	0.15
3,7	XXX	34	72	6	0.06	9,2	XXX	95	142	10	0.15
3,8	XXX	43	81	6	0.06	9,3	XXX	95	142	10	0.15
4	XXX	43	81	6	0.08	9,4	XXX	95	142	10	0.15
4,1	XXX	43	81	6	0.08	9,5	XXX	95	142	10	0.15
4,2	XXX	43	81	6	0.08	3/8	XXX	95	142	10	0.15
4,3	XXX	43	81	6	0.08	9,7	XXX	95	142	10	0.15
4,5	XXX	43	81	6	0.08	9,8	XXX	95	142	10	0.15
4,6	XXX	43	81	6	0.08	9,9	XXX	95	142	10	0.15
3/16	XXX	57	95	6	0.08	10	XXX	95	142	10	0.15
4,8	XXX	57	95	6	0.08	10,2	XXX	114	162	12	0.15
4,9	XXX	57	95	6	0.08	13/32	XXX	114	162	12	0.15
5	XXX	57	95	6	0.08	10,5	XXX	114	162	12	0.15
5,1	XXX	57	95	6	0.12	10,8	XXX	114	162	12	0.15
5,2	XXX	57	95	6	0.12	11	XXX	114	162	12	0.15
5,3	XXX	57	95	6	0.12	7/16	XXX	114	162	12	0.15
5,5	XXX	57	95	6	0.12	11,2	XXX	114	162	12	0.15
7/32	XXX	57	95	6	0.12	11,5	XXX	114	162	12	0.15
5,8	XXX	57	95	6	0.12	11,8	XXX	114	162	12	0.15
5,9	XXX	57	95	6	0.12	12	XXX	114	162	12	0.15
6	XXX	57	95	6	0.12	12,2	XXX	131	178	14	0.2
6,1	XXX	76	114	8	0.12	12,5	XXX	131	178	14	0.2
6,2	XXX	76	114	8	0.12	1/2	XXX	131	178	14	0.2
6,3	XXX	76	114	8	0.12	12,7	XXX	131	178	14	0.2
1/4	XXX	76	114	8	0.12	12,8	XXX	131	178	14	0.2
6,35	XXX	76	114	8	0.12	13	XXX	131	178	14	0.2
6,5	XXX	76	114	8	0.12	13,5	XXX	131	178	14	0.2
6,6	XXX	76	114	8	0.12	13,8	XXX	131	178	14	0.2
6,7	XXX	76	114	8	0.12	14	XXX	131	178	14	0.2
6,8	XXX	76	114	8	0.12	14,2	XXX	152	203	16	0.2
7	XXX	76	114	8	0.12	9/16	XXX	152	203	16	0.2
9/32	XXX	76	114	8	0.12	14,5	XXX	152	203	16	0.2
7,4	XXX	76	114	8	0.12	14,8	XXX	152	203	16	0.2
7,5	XXX	76	114	8	0.12	15	XXX	152	203	16	0.2
7,7	XXX	76	114	8	0.12	15,5	XXX	152	203	16	0.2
7,8	XXX	76	114	8	0.12	15,8	XXX	152	203	16	0.2
7,9	XXX	76	114	8	0.12	5/8	XXX	152	203	16	0.2
5/16	XXX	76	114	8	0.12	16	XXX	152	203	16	0.2
8	XXX	76	114	8	0.12	16,5	XXX	171	222	18	0.25
8,1	XXX	95	142	10	0.15	17	XXX	171	222	18	0.25
8,2	XXX	95	142	10	0.15	17,5	XXX	171	222	18	0.25
8,3	XXX	95	142	10	0.15	18	XXX	171	222	18	0.25
8,5	XXX	95	142	10	0.15	18,5	XXX	190	243	20	0.25
8,6	XXX	95	142	10	0.15	19	XXX	190	243	20	0.25
8,7	XXX	95	142	10	0.15	20	XXX	190	243	20	0.25

Solid carbide | Standard | 8×D | h7 | 2 | 135° | h6 DIN 6535 HA | 25 bar | HPC

Garant

GARANT Master Steel SPEED solid carbide drill

Developed for use with **very high cutting speeds**. Outstandingly suitable for machines with **low installed power** and high speeds.

- Clear reduction in cutting forces due to special cutter geometry.
- Coating for best wear resistance even at high process temperatures.
- Polished flutes for good chip clearance.

A **slim chisel point** and the **special arrangement of the 4 guide chamfers** ensure **high positioning and alignment accuracy**. Optimised micro-geometry for increased working life and performance capability.

Recommendation: Maximum drilling depth:
flute length (see table) less 1.5×nominal Ø.

Note: Versions HB and HE supplied at the same price as HA.
Form **HB:** order with **No. 123026**.
Form **HE:** order with **No. 123025 + 129100HE**.

Plain shank DIN 6535 HA 12 3025

Weldon shank DIN 6535 HB 12 3026

Whistle-notch shank DIN 6535 HE 12 3025 + 12 9100 HE

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	GG	GGG	Uni
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	K	K	
12 3025				195	150	135	125	80						65		120	115	●

Ø h7 mm	12 3025 GARANT Master Steel SPEED solid carbide drill, plain shank DIN 6535 HA TiAlN	L_1 mm	L_{tot} mm	L_2 mm	< 1100 N f mm/rev.
3	XXX	34	72	6	0.09
3,1	XXX	34	72	6	0.09
3,2	XXX	34	72	6	0.09
3,3	XXX	34	72	6	0.09
3,4	XXX	34	72	6	0.09
3,5	XXX	34	72	6	0.09
3,6	XXX	34	72	6	0.09
3,7	XXX	34	72	6	0.09
3,8	XXX	43	81	6	0.09
3,9	XXX	43	81	6	0.09
4	XXX	43	81	6	0.09
4,1	XXX	43	81	6	0.1
4,2	XXX	43	81	6	0.1
4,3	XXX	43	81	6	0.1
4,4	XXX	43	81	6	0.1
4,5	XXX	43	81	6	0.1
4,6	XXX	43	81	6	0.1
4,7	XXX	43	81	6	0.1
4,8	XXX	57	95	6	0.1
4,9	XXX	57	95	6	0.1
5	XXX	57	95	6	0.1
5,1	XXX	57	95	6	0.125
5,2	XXX	57	95	6	0.125
5,3	XXX	57	95	6	0.125
5,4	XXX	57	95	6	0.125
5,5	XXX	57	95	6	0.125
5,6	XXX	57	95	6	0.125
5,7	XXX	57	95	6	0.125
5,8	XXX	57	95	6	0.125
5,9	XXX	57	95	6	0.125
6	XXX	57	95	6	0.125
6,1	XXX	76	114	8	0.15
6,2	XXX	76	114	8	0.15
6,3	XXX	76	114	8	0.15
6,4	XXX	76	114	8	0.15
6,5	XXX	76	114	8	0.15
6,6	XXX	76	114	8	0.15
6,7	XXX	76	114	8	0.15
6,8	XXX	76	114	8	0.15
6,9	XXX	76	114	8	0.15
7	XXX	76	114	8	0.15

Ø h7 mm	12 3025 GARANT Master Steel SPEED solid carbide drill, plain shank DIN 6535 HA TiAlN	L_1 mm	L_{tot} mm	L_2 mm	< 1100 N f mm/rev.
7,1	XXX	76	114	8	0.15
7,2	XXX	76	114	8	0.15
7,3	XXX	76	114	8	0.15
7,4	XXX	76	114	8	0.15
7,5	XXX	76	114	8	0.15
7,6	XXX	76	114	8	0.15
7,7	XXX	76	114	8	0.15
7,8	XXX	76	114	8	0.15
7,9	XXX	76	114	8	0.15
8	XXX	76	114	8	0.15
8,1	XXX	95	142	10	0.18
8,2	XXX	95	142	10	0.18
8,3	XXX	95	142	10	0.18
8,4	XXX	95	142	10	0.18
8,5	XXX	95	142	10	0.18
8,6	XXX	95	142	10	0.18
8,7	XXX	95	142	10	0.18
8,8	XXX	95	142	10	0.18
8,9	XXX	95	142	10	0.18
9	XXX	95	142	10	0.18
9,1	XXX	95	142	10	0.18
9,2	XXX	95	142	10	0.18
9,3	XXX	95	142	10	0.18
9,4	XXX	95	142	10	0.18
9,5	XXX	95	142	10	0.18
9,6	XXX	95	142	10	0.18
9,7	XXX	95	142	10	0.18
9,8	XXX	95	142	10	0.18
9,9	XXX	95	142	10	0.18
10	XXX	95	142	10	0.18
10,1	XXX	114	162	12	0.2
10,2	XXX	114	162	12	0.2
10,3	XXX	114	162	12	0.2
10,4	XXX	114	162	12	0.2
10,5	XXX	114	162	12	0.2
10,6	XXX	114	162	12	0.2
10,7	XXX	114	162	12	0.2
10,8	XXX	114	162	12	0.2
10,9	XXX	114	162	12	0.2
11	XXX	114	162	12	0.2
11,1	XXX	114	162	12	0.2

Ø h7 mm	12 3025 GARANT Master Steel SPEED solid carbide drill, plain shank DIN 6535 HA TiAlN	L_1 mm	L_{tot} mm	L_2 mm	< 1100 N f mm/rev.
11,2	XXX	114	162	12	0.2
11,3	XXX	114	162	12	0.2
11,4	XXX	114	162	12	0.2
11,5	XXX	114	162	12	0.2
11,6	XXX	114	162	12	0.2
11,7	XXX	114	162	12	0.2
11,8	XXX	114	162	12	0.2
11,9	XXX	114	162	12	0.2
12	XXX	114	162	12	0.2
12,2	XXX	133	178	14	0.23
12,5	XXX	133	178	14	0.23
12,8	XXX	133	178	14	0.23
13	XXX	133	178	14	0.23
13,2	XXX	133	178	14	0.23
13,5	XXX	133	178	14	0.23
13,8	XXX	133	178	14	0.23
14	XXX	133	178	14	0.23
14,2	XXX	152	203	16	0.26
14,5	XXX	152	203	16	0.26
14,8	XXX	152	203	16	0.26
15	XXX	152	203	16	0.26
15,2	XXX	152	203	16	0.26
15,5	XXX	152	203	16	0.26
15,8	XXX	152	203	16	0.26
16	XXX	152	203	16	0.26
16,2	XXX	171	222	18	0.29
16,5	XXX	171	222	18	0.29
16,8	XXX	171	222	18	0.29
17	XXX	171	222	18	0.29
17,2	XXX	171	222	18	0.29
17,5	XXX	171	222	18	0.29
17,8	XXX	171	222	18	0.29
18	XXX	171	222	18	0.29
18,2	XXX	190	243	20	0.325
18,5	XXX	190	243	20	0.325
18,8	XXX	190	243	20	0.325
19	XXX	190	243	20	0.325
19,2	XXX	190	243	20	0.325
19,5	XXX	190	243	20	0.325
19,8	XXX	190	243	20	0.325
20	XXX	190	243	20	0.325

Solid carbide | Standard | 8×D | h7 | 3 | 140° | h6 DIN 6535 HA | 25 bar | HPC

GARANT Master Steel FEED solid carbide drill

3-flute drill, specially developed for **use at very high feed rates**. Outstandingly suitable for **machines with high installed power** and stable operating conditions.

- Special cutter geometry with stable cutting edges and large clearance at the centre enables very high feed rates.
- The patented tip is optimised for chip flow and generates low cutting pressure with good chip breakage.

The **sector-leading technology of the drill point** guarantees **optimum self-centring behaviour.** 3 guide chamfers guarantee a stable exit from the hole and an exact roundness of the hole.

Recommendation: Maximum drilling depth:
flute length (see table) less 1.5×nominal ∅.

Note:	Form HB and HE supplied at the same price as HA. Form **HB:** order with **No. 123036**. Form **HE:** order with **No. 123035 + 129100HE**.

Plain shank DIN 6535 HA 123035

Weldon shank DIN 6535 HB 123036

Whistle-Notch shank DIN 6535 HE 123035 + 129100HE

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG	GGG	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	M	M	S	K	K						
123035				120	110	100	90	70	60				55	50	40	120	80	●		●	●		

∅ h7	11E	123035	L_{tot}	< 1100 N f
mm or inch		GARANT Master Steel FEED solid carbide drill, plain shank DIN 6535 HA		
		TiAlN	mm	mm	mm	mm/rev.
4	XXX	43	81	6	0.28
4,1	XXX	43	81	6	0.28
4,2	XXX	43	81	6	0.28
4,3	XXX	43	81	6	0.28
4,4	XXX	43	81	6	0.28
4,5	XXX	43	81	6	0.28
4,6	XXX	43	81	6	0.28
4,7	XXX	43	81	6	0.28
3/16	XXX	57	95	6	0.28
4,8	XXX	57	95	6	0.28
4,9	XXX	57	95	6	0.28
5	XXX	57	95	6	0.28
5,1	XXX	57	95	6	0.32
5,2	XXX	57	95	6	0.32
5,3	XXX	57	95	6	0.32
5,4	XXX	57	95	6	0.32
5,5	XXX	57	95	6	0.32
7/32	XXX	57	95	6	0.32
5,6	XXX	57	95	6	0.32
5,7	XXX	57	95	6	0.32
5,8	XXX	57	95	6	0.32
5,9	XXX	57	95	6	0.32
6	XXX	57	95	6	0.32
6,1	XXX	76	114	8	0.37
6,2	XXX	76	114	8	0.37
6,3	XXX	76	114	8	0.37
1/4	XXX	76	114	8	0.37
6,35	XXX	76	114	8	0.37
6,4	XXX	76	114	8	0.37
6,5	XXX	76	114	8	0.37
6,6	XXX	76	114	8	0.37
6,7	XXX	76	114	8	0.37
6,8	XXX	76	114	8	0.37
6,9	XXX	76	114	8	0.37
7	XXX	76	114	8	0.37
7,1	XXX	76	114	8	0.37
9/32	XXX	76	114	8	0.37
7,2	XXX	76	114	8	0.37
7,3	XXX	76	114	8	0.37
7,4	XXX	76	114	8	0.37
7,5	XXX	76	114	8	0.37
7,6	XXX	76	114	8	0.37
7,7	XXX	76	114	8	0.37

∅ h7	11E	123035	L_{tot}	< 1100 N f
mm or inch		GARANT Master Steel FEED solid carbide drill, plain shank DIN 6535 HA		
		TiAlN	mm	mm	mm	mm/rev.
7,8	XXX	76	114	8	0.37
7,9	XXX	76	114	8	0.37
5/16	XXX	76	114	8	0.37
8	XXX	76	114	8	0.37
8,1	XXX	95	142	10	0.44
8,2	XXX	95	142	10	0.44
8,3	XXX	95	142	10	0.44
8,4	XXX	95	142	10	0.44
8,5	XXX	95	142	10	0.44
8,6	XXX	95	142	10	0.44
8,7	XXX	95	142	10	0.44
11/32	XXX	95	142	10	0.44
8,8	XXX	95	142	10	0.44
8,9	XXX	95	142	10	0.44
9	XXX	95	142	10	0.44
9,1	XXX	95	142	10	0.44
9,2	XXX	95	142	10	0.44
9,3	XXX	95	142	10	0.44
9,4	XXX	95	142	10	0.44
9,5	XXX	95	142	10	0.44
3/8	XXX	95	142	10	0.44
9,6	XXX	95	142	10	0.44
9,7	XXX	95	142	10	0.44
9,8	XXX	95	142	10	0.44
9,9	XXX	95	142	10	0.44
10	XXX	95	142	10	0.44
10,1	XXX	114	162	12	0.5
10,2	XXX	114	162	12	0.5
10,3	XXX	114	162	12	0.5
13/32	XXX	114	162	12	0.5
10,4	XXX	114	162	12	0.5
10,5	XXX	114	162	12	0.5
10,6	XXX	114	162	12	0.5
10,7	XXX	114	162	12	0.5
10,8	XXX	114	162	12	0.5
10,9	XXX	114	162	12	0.5
11	XXX	114	162	12	0.5
11,1	XXX	114	162	12	0.5
7/16	XXX	114	162	12	0.5
11,2	XXX	114	162	12	0.5
11,3	XXX	114	162	12	0.5
11,4	XXX	114	162	12	0.5
11,5	XXX	114	162	12	0.5

∅ h7	11E	123035	L_{tot}	< 1100 N f
mm or inch		GARANT Master Steel FEED solid carbide drill, plain shank DIN 6535 HA		
		TiAlN	mm	mm	mm	mm/rev.
11,6	XXX	114	162	12	0.5
11,7	XXX	114	162	12	0.5
11,8	XXX	114	162	12	0.5
11,9	XXX	114	162	12	0.5
12	XXX	114	162	12	0.5
12,2	XXX	133	178	14	0.56
12,5	XXX	133	178	14	0.56
1/2	XXX	133	178	14	0.56
12,7	XXX	114	162	12	0.5
12,8	XXX	133	178	14	0.56
13	XXX	133	178	14	0.56
13,2	XXX	133	178	14	0.56
13,5	XXX	133	178	14	0.56
13,8	XXX	133	178	14	0.56
14	XXX	133	178	14	0.56
14,2	XXX	152	203	16	0.61
9/16	XXX	152	203	16	0.61
14,5	XXX	152	203	16	0.61
14,8	XXX	152	203	16	0.61
15	XXX	152	203	16	0.61
15,2	XXX	152	203	16	0.61
15,5	XXX	152	203	16	0.61
15,8	XXX	152	203	16	0.61
5/8	XXX	152	203	16	0.61
16	XXX	152	203	16	0.61
16,2	XXX	171	222	18	0.66
16,5	XXX	171	222	18	0.66
16,8	XXX	171	222	18	0.66
17	XXX	171	222	18	0.66
17,2	XXX	171	222	18	0.66
17,5	XXX	171	222	18	0.66
17,8	XXX	171	222	18	0.66
18	XXX	171	222	18	0.66
18,2	XXX	190	243	20	0.69
18,5	XXX	190	243	20	0.69
18,8	XXX	190	243	20	0.69
19	XXX	190	243	20	0.69
19,2	XXX	190	243	20	0.69
19,5	XXX	190	243	20	0.69
19,8	XXX	190	243	20	0.69
20	XXX	190	243	20	0.69

Solid carbide | Standard | 8×D | h7 | 2 | 135° | h6 DIN 6535 HA | 25 bar | HPC

Garant

Solid carbide HPC drill

Cutting chisel edge with **high centring accuracy** due to **strong core and special point geometry.**
Particularly high alignment accuracy due to **4 guide chamfers** which stabilise the drill even at extreme depths!
Convex cutting edges with honed edges and special flute profile for **short chips**, even on long chipping materials.

Advantage: **High process reliability and surface quality of the hole.**

Recommendation: **Maximum drilling depth:**
flute length (see table) less 1.5×nominal Ø.

Note:
Form **HB** and **HE** supplied at the same price as HA.
Form **HB:** order with **No. 123102**.
Form **HE:** order with **No. 123101 + 129100 HE**.
NEW GENERATION AVAILABLE!
Recommended successor products are No. 123025 and 123035.

Plain shank DIN 6535 HA 123101

Weldon shank DIN6535 HB 123102

Whistle-notch shank DIN6535 HE 123101 + 129100HE

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	K						
123101		180	140	110	90	80	50	35						40	35		70	●		●			

Ø h7	11E	12 3101 Solid carbide HPC drill plain shank DIN 6535 HA					Ø h7	11E	12 3101 Solid carbide HPC drill plain shank DIN 6535 HA				
mm		TiAlN	mm	L_{tot} mm	mm	< 1100 N f mm/rev.	mm		TiAlN	mm	L_{tot} mm	mm	< 1100 N f mm/rev.
3		XXX	34	72	6	0.1	8,5		XXX	95	142	10	0.15
3,3		XXX	34	72	6	0.1	8,6		XXX	95	142	10	0.15
3,4		XXX	34	72	6	0.1	8,8		XXX	95	142	10	0.15
3,5		XXX	34	72	6	0.1	9		XXX	95	142	10	0.2
3,7		XXX	34	72	6	0.1	9,3		XXX	95	142	10	0.2
3,8		XXX	43	81	6	0.1	9,5		XXX	95	142	10	0.2
4		XXX	43	81	6	0.1	9,7		XXX	95	142	10	0.2
4,1		XXX	43	81	6	0.1	9,8		XXX	95	142	10	0.2
4,2		XXX	43	81	6	0.1	10		XXX	95	142	10	0.2
4,3		XXX	43	81	6	0.1	10,2		XXX	114	162	12	0.2
4,5		XXX	43	81	6	0.1	10,5		XXX	114	162	12	0.2
4,6		XXX	43	81	6	0.1	11		XXX	114	162	12	0.2
4,8		XXX	57	95	6	0.1	11,2		XXX	114	162	12	0.2
5		XXX	57	95	6	0.1	11,5		XXX	114	162	12	0.2
5,1		XXX	57	95	6	0.1	11,8		XXX	114	162	12	0.2
5,2		XXX	57	95	6	0.1	12		XXX	114	162	12	0.26
5,3		XXX	57	95	6	0.1	12,2		XXX	131	178	14	0.26
5,5		XXX	57	95	6	0.1	12,5		XXX	131	178	14	0.26
5,8		XXX	57	95	6	0.1	12,8		XXX	131	178	14	0.26
6		XXX	57	95	6	0.15	13		XXX	131	178	14	0.26
6,1		XXX	76	114	8	0.15	13,5		XXX	131	178	14	0.26
6,5		XXX	76	114	8	0.15	14		XXX	131	178	14	0.26
6,6		XXX	76	114	8	0.15	14,5		XXX	152	203	16	0.26
6,8		XXX	76	114	8	0.15	14,8		XXX	152	203	16	0.26
7		XXX	76	114	8	0.15	15		XXX	152	203	16	0.26
7,5		XXX	76	114	8	0.15	15,5		XXX	152	203	16	0.26
7,7		XXX	76	114	8	0.15	16		XXX	152	203	16	0.3
7,8		XXX	76	114	8	0.15	17,5		XXX	171	222	18	0.3
8		XXX	76	114	8	0.15	18		XXX	171	222	18	0.3
8,1		XXX	95	142	10	0.15	19		XXX	190	243	20	0.32
8,3		XXX	95	142	10	0.15	20		XXX	190	243	20	0.32

Solid carbide | Standard | 8×D | h7 | 2 | 135° | h6 DIN 6535 HA | 25 bar

HOLEX Solid carbide high performance drill

12 3103 – **HOLEX Pro Steel:**
Straight major cutting edges and a **special flute profile** ensure good chip evacuation. The robust cutting edge geometry ensures high-performance drilling with good process reliability. A wide range of applications in steel materials thanks to a combination of tough ultra-fine grain carbide and extremely wear-resistant coating.

Recommendation: Maximum drilling depth:
Flute length (see table) less 1.5×nominal ∅.

Note:

12 3103 – Version HB and HE supplied at the same price as HA.
Form **HB:** state **No. 123104**.
Form **HE:** state **No. 123109**.

12 3106 – **NEW GENERATION AVAILABLE!**
Recommended successor product is No. 123103.

Plain shank DIN 6535 HA 12 3103

Weldon shank DIN 6535 HB 12 3104

Whistle-Notch shank DIN 6535 HE 12 3109

Plain shank DIN 6535 HA 12 3106

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	INOX < 900 N	INOX > 900 N	GG	GGG	GG(G)	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	M	M	K	K	K						
12 3103	250	200	160	125	115	95	90	65					35	30	100	65		●		●	●		
12 3106		175	135	105	85	75	45	30					35	30			65	●		●			

∅ h7	12F 12 3103 HOLEX Pro Steel solid carbide drill, plain shank	12E 12 3106 Solid carbide high performance drill plain shank		L_{tot}		< 900 N f
	DIN 6535 HA					12 3103
mm	TiAlN	TiN	mm	mm	mm	mm/rev.
3	XXX	XXX	34	72	6	0.13
3,1	XXX	–	34	72	6	0.13
3,2	XXX	–	34	72	6	0.13
3,3	XXX	XXX	34	72	6	0.13
3,4	XXX	XXX	34	72	6	0.13
3,5	XXX	XXX	34	72	6	0.13
3,6	XXX	–	34	72	6	0.13
3,7	XXX	XXX	34	72	6	0.13
3,8	XXX	XXX	43	81	6	0.13
3,9	XXX	–	43	81	6	0.13
4	XXX	XXX	43	81	6	0.13
4,1	XXX	XXX	43	81	6	0.13
4,2	XXX	XXX	43	81	6	0.13
4,3	XXX	XXX	43	81	6	0.13
4,4	XXX	–	43	81	6	0.13
4,5	XXX	XXX	43	81	6	0.13
4,6	XXX	XXX	43	81	6	0.13
4,7	XXX	–	43	81	6	0.13
4,8	XXX	XXX	57	95	6	0.13
4,9	XXX	–	57	95	6	0.13
5	XXX	XXX	57	95	6	0.13
5,1	XXX	XXX	57	95	6	0.13
5,2	XXX	XXX	57	95	6	0.13
5,3	XXX	XXX	57	95	6	0.13
5,4	XXX	–	57	95	6	0.13
5,5	XXX	XXX	57	95	6	0.13
5,6	XXX	–	57	95	6	0.13
5,7	XXX	–	57	95	6	0.13
5,8	XXX	XXX	57	95	6	0.13
5,9	XXX	XXX	57	95	6	0.13
6	XXX	XXX	57	95	6	0.13
6,1	XXX	XXX	76	114	8	0.16
6,2	XXX	XXX	76	114	8	0.16
6,3	XXX	–	76	114	8	0.16
6,4	XXX	–	76	114	8	0.16
6,5	XXX	XXX	76	114	8	0.16
6,6	XXX	XXX	76	114	8	0.16
6,7	XXX	–	76	114	8	0.16
6,8	XXX	XXX	76	114	8	0.16
6,9	XXX	–	76	114	8	0.16
7	XXX	XXX	76	114	8	0.16
7,1	XXX	–	76	114	8	0.16
7,2	XXX	–	76	114	8	0.16
7,3	XXX	–	76	114	8	0.16
7,4	XXX	XXX	76	114	8	0.16
7,5	XXX	XXX	76	114	8	0.16
7,6	XXX	–	76	114	8	0.16
7,7	XXX	–	76	114	8	0.16
7,8	XXX	XXX	76	114	8	0.16
7,9	XXX	–	76	114	8	0.16
8	XXX	XXX	76	114	8	0.16
8,1	XXX	XXX	95	142	10	0.18
8,2	XXX	XXX	95	142	10	0.18
8,3	XXX	–	95	142	10	0.18
8,4	XXX	–	95	142	10	0.18

∅ h7	12F 12 3103 HOLEX Pro Steel solid carbide drill, plain shank	12E 12 3106 Solid carbide high performance drill plain shank		L_{tot}		< 900 N f
	DIN 6535 HA					12 3103
mm	TiAlN	TiN	mm	mm	mm	mm/rev.
8,5	XXX	XXX	95	142	10	0.18
8,6	XXX	XXX	95	142	10	0.18
8,7	XXX	XXX	95	142	10	0.18
8,8	XXX	XXX	95	142	10	0.18
9	XXX	XXX	95	142	10	0.2
9,1	XXX	–	95	142	10	0.2
9,2	XXX	–	95	142	10	0.2
9,3	XXX	–	95	142	10	0.2
9,4	XXX	–	95	142	10	0.2
9,5	XXX	XXX	95	142	10	0.2
9,6	XXX	–	95	142	10	0.2
9,7	XXX	–	95	142	10	0.2
9,8	XXX	XXX	95	142	10	0.2
9,9	XXX	–	95	142	10	0.2
10	XXX	XXX	95	142	10	0.2
10,1	XXX	–	114	162	12	0.2
10,2	XXX	XXX	114	162	12	0.2
10,3	XXX	–	114	162	12	0.2
10,4	XXX	–	114	162	12	0.2
10,5	XXX	XXX	114	162	12	0.2
10,8	XXX	XXX	114	162	12	0.2
11	XXX	XXX	114	162	12	0.2
11,2	XXX	XXX	114	162	12	0.2
11,3	XXX	–	114	162	12	0.2
11,4	XXX	–	114	162	12	0.2
11,5	XXX	XXX	114	162	12	0.2
11,7	XXX	–	114	162	12	0.2
11,8	XXX	XXX	114	162	12	0.2
12	XXX	XXX	114	162	12	0.2
12,2	XXX	–	133	178	14	0.23
12,5	XXX	XXX	133	178	14	0.23
12,8	XXX	XXX	133	178	14	0.23
13	XXX	XXX	133	178	14	0.23
13,5	XXX	XXX	133	178	14	0.23
13,8	XXX	XXX	133	178	14	0.23
14	XXX	XXX	133	178	14	0.23
14,2	XXX	–	152	203	16	0.23
14,5	XXX	–	152	203	16	0.23
14,8	XXX	–	152	203	16	0.23
15	XXX	XXX	152	203	16	0.23
15,1	XXX	–	152	203	16	0.23
15,2	XXX	–	152	203	16	0.23
15,5	XXX	–	152	203	16	0.23
15,8	XXX	XXX	152	203	16	0.23
16	XXX	XXX	152	203	16	0.23
16,2	XXX	–	171	222	18	0.25
16,5	XXX	–	171	222	18	0.25
17	XXX	–	171	222	18	0.25
17,5	XXX	XXX	171	222	18	0.25
18	XXX	XXX	171	222	18	0.25
18,5	XXX	–	190	243	20	0.25
19	XXX	–	190	243	20	0.25
19,8	XXX	–	190	243	20	0.25
20	XXX	–	190	243	20	0.25

Solid carbide | Standard | 10×D | h7 | 2 | 135° | h6 DIN 6535 HA | 25 bar | HPC

Garant

Solid carbide HPC drill

Cutting chisel edge with **high centring accuracy** due to **strong core and special point geometry.**
Particularly high alignment accuracy due to **4 guide chamfers** which stabilise the drill even at extreme depths!
Straight major cutting edges with honed edges and special flute profile for **short chips**, even on long chipping materials.

Advantage: **High process reliability and surface quality of the hole.**

Recommendation: **Maximum drilling depth:**
flute length (see table) less 1.5×nominal Ø.

Note: Form HB and HE supplied at the same price as HA.
Form **HB:** order with **No. 123115**.
Form **HE:** order with **No. 123110 + 129100 HE**.

Plain shank DIN 6535 HA 123110

Weldon shank DIN 6535 HB 123115

Whistle-notch shank DIN 6535 HE 123110 + 129100HE

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	Graphite GRP CRP	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	N						
123110		200	180	110	80	70								65	55	25		○		●	●		

Ø h7	11E	123110 Solid carbide HPC drill plain shank DIN 6535 HA				INOX < 900 N
mm		TiAlN	mm	L_{tot} mm	mm	f mm/rev.
1		XXX	15	45	4	0.05
1,1		XXX	15	45	4	0.05
1,2		XXX	15	45	4	0.05
1,3		XXX	15	45	4	0.05
1,4		XXX	15	45	4	0.05
1,5		XXX	20	50	4	0.05
1,6		XXX	20	50	4	0.05
1,7		XXX	20	50	4	0.05
1,8		XXX	20	50	4	0.05
1,9		XXX	24	55	4	0.05
2		XXX	24	55	4	0.05
2,1		XXX	24	55	4	0.05
2,2		XXX	24	55	4	0.05
2,3		XXX	29	60	4	0.05
2,4		XXX	29	60	4	0.05
2,5		XXX	29	60	4	0.05
2,6		XXX	29	60	4	0.05
2,7		XXX	34	65	4	0.05
2,8		XXX	34	65	4	0.05
2,9		XXX	34	65	4	0.05
3		XXX	40	80	6	0.05
3,3		XXX	40	80	6	0.08
3,5		XXX	40	80	6	0.08
3,8		XXX	48	86	6	0.08
4		XXX	48	86	6	0.08
4,2		XXX	48	86	6	0.08
4,5		XXX	48	86	6	0.08
4,8		XXX	62	100	6	0.08
5		XXX	62	100	6	0.08
5,1		XXX	62	100	6	0.12
5,2		XXX	62	100	6	0.12
5,5		XXX	62	100	6	0.12
5,7		XXX	70	110	6	0.12
5,8		XXX	70	110	6	0.12
5,9		XXX	70	110	6	0.12
6		XXX	70	110	6	0.12
6,2		XXX	75	114	8	0.12
6,3		XXX	75	114	8	0.12
6,5		XXX	75	114	8	0.12
6,6		XXX	75	114	8	0.12
6,7		XXX	75	114	8	0.12
6,8		XXX	75	114	8	0.12
6,9		XXX	75	114	8	0.12
7		XXX	75	114	8	0.12

Ø h7	11E	123110 Solid carbide HPC drill plain shank DIN 6535 HA				INOX < 900 N
mm		TiAlN	mm	L_{tot} mm	mm	f mm/rev.
7,1		XXX	91	130	8	0.12
7,5		XXX	91	130	8	0.12
7,6		XXX	91	130	8	0.12
7,7		XXX	91	130	8	0.12
7,8		XXX	91	130	8	0.12
8		XXX	91	130	8	0.12
8,1		XXX	107	150	10	0.15
8,2		XXX	107	150	10	0.15
8,4		XXX	107	150	10	0.15
8,5		XXX	107	150	10	0.15
8,6		XXX	107	150	10	0.15
8,7		XXX	107	150	10	0.15
9		XXX	107	150	10	0.15
9,3		XXX	107	150	10	0.15
9,4		XXX	107	150	10	0.15
9,5		XXX	107	150	10	0.15
9,8		XXX	107	150	10	0.15
10		XXX	107	150	10	0.15
10,2		XXX	130	180	12	0.15
10,5		XXX	130	180	12	0.15
10,8		XXX	130	180	12	0.15
11		XXX	130	180	12	0.15
11,2		XXX	130	180	12	0.15
11,5		XXX	130	180	12	0.15
11,8		XXX	130	180	12	0.15
12		XXX	130	180	12	0.15
12,2		XXX	160	208	14	0.2
12,5		XXX	160	208	14	0.2
13		XXX	160	208	14	0.2
13,5		XXX	160	208	14	0.2
14		XXX	160	208	14	0.2
14,2		XXX	186	236	16	0.2
15		XXX	186	236	16	0.2
15,5		XXX	186	236	16	0.2
15,8		XXX	186	236	16	0.2
16		XXX	186	236	16	0.2
16,5		XXX	210	262	18	0.25
17		XXX	210	262	18	0.25
17,5		XXX	210	262	18	0.25
18		XXX	210	262	18	0.25
19		XXX	234	286	20	0.25
19,5		XXX	234	286	20	0.25
20		XXX	234	286	20	0.25

Solid carbide | Standard | 12×D | Type W | h7 | 2 | 135° | h6 DIN 6535 HA | 25 bar | HPC

Garant Solid carbide HPC drill

DLC coating sp² of the latest generation with **low coefficient of friction** results in **outstanding chip clearance.** For **high-performance milling** of **aluminium materials**. **High roundness** and **alignment accuracy of the deep hole**, thanks to **6 guide chamfers.**

Recommendation: Maximum drilling depth:
flute length (see table) less 1.5×nominal ∅.

Note: For process reliability when using the 12×D drill, an initial centre drilling with NC spotting drills No. 121068– 121130 is necessary.
Form HB and HE are supplied at the same price as HA.
Order form **HB:** with **No. 123179**.
Order form **HE:** with **No. 123178 + 129100HE**.

Plain shank DIN 6535 HA 123178

Weldon shank DIN 6535 HB 123179

Whistle-Notch shank DIN 6535 HE 123178 + 129100HE

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	PMMA acrylic	PE-HD	PA 66	PEEK	PF 31	AFRP aramid	PVDF GF20	POM GF25	PA 66 GF30	PEEK GF30	PTFE CF25	Cu	CuZn	GRP	CRP					
ISO code	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N					
123178	250	280	245	105			85			60		55	50	55	120	150	55	55		●	●		

∅ h7	11E	123178 Solid carbide HPC drill, plain shank DIN 6535 HA				Alu f	∅ h7	11E	123178 Solid carbide HPC drill, plain shank DIN 6535 HA				Alu f
mm		DLC	mm	L_{tot} mm	mm	mm/rev.	mm		DLC	mm	L_{tot} mm	mm	mm/rev.
2		XXX	34	72	4	0.2	7,2		XXX	108	146	8	0.45
2,1		XXX	34	72	4	0.22	7,3		XXX	108	146	8	0.45
2,2		XXX	34	72	4	0.22	7,4		XXX	108	146	8	0.45
2,3		XXX	34	72	4	0.22	7,5		XXX	108	146	8	0.45
2,4		XXX	40	81	4	0.22	7,6		XXX	108	146	8	0.45
2,5		XXX	40	81	4	0.22	7,7		XXX	108	146	8	0.45
2,6		XXX	40	81	4	0.22	7,8		XXX	108	146	8	0.45
2,7		XXX	42	81	4	0.22	7,9		XXX	108	146	8	0.45
2,8		XXX	42	81	4	0.22	8		XXX	108	146	8	0.45
2,9		XXX	42	81	4	0.22	8,1		XXX	120	162	10	0.55
3		XXX	54	92	6	0.22	8,2		XXX	120	162	10	0.55
3,1		XXX	54	92	6	0.35	8,3		XXX	120	162	10	0.55
3,2		XXX	54	92	6	0.35	8,4		XXX	120	162	10	0.55
3,3		XXX	54	92	6	0.35	8,5		XXX	120	162	10	0.55
3,4		XXX	54	92	6	0.35	8,6		XXX	120	162	10	0.55
3,5		XXX	54	92	6	0.35	8,7		XXX	120	162	10	0.55
3,6		XXX	54	92	6	0.35	8,8		XXX	120	162	10	0.55
3,7		XXX	54	92	6	0.35	8,9		XXX	120	162	10	0.55
3,8		XXX	64	102	6	0.35	9		XXX	120	162	10	0.55
3,9		XXX	64	102	6	0.35	9,1		XXX	120	162	10	0.55
4		XXX	64	102	6	0.35	9,2		XXX	120	162	10	0.55
4,1		XXX	64	102	6	0.35	9,3		XXX	120	162	10	0.55
4,2		XXX	64	102	6	0.35	9,4		XXX	120	162	10	0.55
4,3		XXX	64	102	6	0.35	9,5		XXX	120	162	10	0.55
4,4		XXX	64	102	6	0.35	9,6		XXX	120	162	10	0.55
4,5		XXX	64	102	6	0.35	9,7		XXX	120	162	10	0.55
4,6		XXX	64	102	6	0.35	9,8		XXX	120	162	10	0.55
4,7		XXX	64	102	6	0.35	9,9		XXX	120	162	10	0.55
4,8		XXX	78	116	6	0.35	10		XXX	120	162	10	0.55
4,9		XXX	78	116	6	0.35	10,2		XXX	156	204	12	0.55
5		XXX	78	116	6	0.35	10,5		XXX	156	204	12	0.55
5,1		XXX	78	116	6	0.45	10,8		XXX	156	204	12	0.55
5,2		XXX	78	116	6	0.45	11		XXX	156	204	12	0.55
5,3		XXX	78	116	6	0.45	11,5		XXX	156	204	12	0.55
5,4		XXX	78	116	6	0.45	11,8		XXX	156	204	12	0.55
5,5		XXX	78	116	6	0.45	12		XXX	156	204	12	0.55
5,6		XXX	78	116	6	0.45	12,5		XXX	182	230	14	0.65
5,7		XXX	78	116	6	0.45	12,8		XXX	182	230	14	0.65
5,8		XXX	78	116	6	0.45	13		XXX	182	230	14	0.65
5,9		XXX	78	116	6	0.45	13,5		XXX	182	230	14	0.65
6		XXX	78	116	6	0.45	13,8		XXX	182	230	14	0.65
6,1		XXX	108	146	8	0.45	14		XXX	182	230	14	0.65
6,2		XXX	108	146	8	0.45	14,5		XXX	208	260	16	0.65
6,3		XXX	108	146	8	0.45	14,8		XXX	208	260	16	0.65
6,4		XXX	108	146	8	0.45	15		XXX	208	260	16	0.65
6,5		XXX	108	146	8	0.45	15,5		XXX	208	260	16	0.65
6,6		XXX	108	146	8	0.45	15,8		XXX	208	260	16	0.65
6,7		XXX	108	146	8	0.45	16		XXX	208	260	16	0.65
6,8		XXX	108	146	8	0.45	16,5		XXX	234	285	18	0.7
6,9		XXX	108	146	8	0.45	16,8		XXX	234	285	18	0.7
7		XXX	108	146	8	0.45	17		XXX	234	285	18	0.7
7,1		XXX	108	146	8	0.45	17,5		XXX	234	285	18	0.7

Solid carbide | Standard | 12×D | m6 | 2 | 135° | h6 DIN 6535 HA | 25 bar | HPC

Garant

Solid carbide HPC drill with 4 cooling channels

Cutting chisel edge with **high centring accuracy** due to **strong core and special point geometry.** High roundness and alignment accuracy of the deep hole, thanks to **4 guide chamfers.** Outstanding chip evacuation due to **4 internal cooling channels** from ∅ 3.8 mm. Up to 3.7 mm ∅ with 2 internal cooling channels. **Straight major cutting edges** with honed edges and special flute profile for **short chips**, even on long chipping materials.

Recommendation: Maximum drilling depth:
flute length (see table) less 1.5×nominal ∅.

Note:	For process reliability when using the 12×D drill, an initial centre drilling with NC spotting drills No. 121068– 121130 is necessary. Form HB and HE are supplied at the same price as HA. Order form **HB:** with **No. 123214**. Order form **HE:** with **No. 123212 + 129100HE**.

Plain shank DIN 6535 HA 12 3212

Weldon shank DIN 6535 HB 12 3214

Whistle-Notch shank DIN 6535 HE 12 3212 + 12 9100HE

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	Graphite GRP CRP	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	N						
12 3212				90	75	70	55	32						70	60			●		●	●		

∅ m6	11E	12 3212					INOX > 900 N
		Solid carbide HPC drill plain shank					
		DIN 6535 HA					
		TiAlN					
mm or inch			mm	mm	mm	mm/rev.	
3		XXX	54	92	6	0.06	
3,3		XXX	54	92	6	0.06	
3,4		XXX	54	92	6	0.06	
3,5		XXX	54	92	6	0.06	
3,7		XXX	54	92	6	0.06	
3,8		XXX	64	102	6	0.06	
4		XXX	64	102	6	0.08	
4,2		XXX	64	102	6	0.08	
4,5		XXX	64	102	6	0.08	
3/16		XXX	78	116	6	0.08	
4,8		XXX	78	116	6	0.08	
5		XXX	78	116	6	0.08	
5,5		XXX	78	116	6	0.12	
7/32		XXX	78	116	6	0.12	
5,8		XXX	78	116	6	0.12	
6		XXX	78	116	6	0.12	
6,3		XXX	108	146	8	0.12	
1/4		XXX	108	146	8	0.12	
6,35		XXX	108	146	8	0.12	
6,5		XXX	108	146	8	0.12	
6,6		XXX	108	146	8	0.12	
6,8		XXX	108	146	8	0.12	
7		XXX	108	146	8	0.12	
9/32		XXX	108	146	8	0.12	
7,5		XXX	108	146	8	0.12	
7,8		XXX	108	146	8	0.12	
5/16		XXX	108	146	8	0.12	

∅ m6	11E	12 3212					INOX > 900 N
		Solid carbide HPC drill plain shank					
		DIN 6535 HA					
		TiAlN					
mm or inch			mm	mm	mm	mm/rev.	
8		XXX	108	146	8	0.12	
8,2		XXX	120	162	10	0.15	
8,5		XXX	120	162	10	0.15	
11/32		XXX	120	162	10	0.15	
9		XXX	120	162	10	0.15	
9,5		XXX	120	162	10	0.15	
3/8		XXX	120	162	10	0.15	
9,8		XXX	120	162	10	0.15	
10		XXX	120	162	10	0.15	
13/32		XXX	156	204	12	0.15	
10,5		XXX	156	204	12	0.15	
11		XXX	156	204	12	0.15	
7/16		XXX	156	204	12	0.15	
11,5		XXX	156	204	12	0.15	
11,8		XXX	156	204	12	0.15	
12		XXX	156	204	12	0.15	
1/2		XXX	182	230	14	0.2	
12,7		XXX	182	230	14	0.2	
13		XXX	182	230	14	0.2	
13,5		XXX	182	230	14	0.2	
14		XXX	182	230	14	0.2	
9/16		XXX	208	260	16	0.2	
14,8		XXX	208	260	16	0.2	
15,8		XXX	208	260	16	0.2	
5/8		XXX	208	260	16	0.2	
16		XXX	208	260	16	0.2	
17,5		XXX	234	285	18	0.25	

Solid carbide | Standard | 12×D | h7 | 2 | 135° | h6 DIN 6535 HA | 25 bar | HPC

Garant

GARANT Master Steel SPEED solid carbide drill

Developed for use with **very high cutting speeds**. Outstandingly suitable for machines with **low installed power** and high speeds.

- Clear reduction in cutting forces due to special cutter geometry.
- Coating for best wear resistance even at high process temperatures.
- Polished flutes for good chip clearance.

A **slim chisel point** and the **special arrangement of the 4 guide chamfers** ensure **high positioning and alignment accuracy**.
Optimised micro-geometry for increased working life and performance capability.

Recommendation: Maximum drilling depth:
flute length (see table) less 1.5×nominal ∅.

Note: For process reliability when using the 12×D drill, an initial centre drilling with NC spotting drills No. 121068 – 121130 is necessary.
Form HB and HE are supplied at the same price as HA.
Order form **HB:** with **No. 123226**.
Order form **HE:** with **No. 123225 + 129100HE**.

Plain shank DIN 6535 HA 12 3225

Weldon shank DIN 6535 HB 12 3226

Whistle-notch shank DIN 6535 HE 12 3225 + 12 9100HE

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	GG	GGG	Uni
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	K	K	
12 3225				160	125	115	105	65						55		100	95	●

∅ h7	1IE 12 3225 GARANT Master Steel SPEED solid carbide drill, plain shank DIN 6535 HA		L_{tot}		< 1100 N f
mm	TiAlN	mm	mm	mm	mm/rev.
3	XXX	54	92	6	0.09
3,1	XXX	54	92	6	0.09
3,2	XXX	54	92	6	0.09
3,3	XXX	54	92	6	0.09
3,4	XXX	54	92	6	0.09
3,5	XXX	54	92	6	0.09
3,6	XXX	54	92	6	0.09
3,7	XXX	54	92	6	0.09
3,8	XXX	64	102	6	0.09
3,9	XXX	64	102	6	0.09
4	XXX	64	102	6	0.09
4,1	XXX	64	102	6	0.1
4,2	XXX	64	102	6	0.1
4,3	XXX	64	102	6	0.1
4,4	XXX	64	102	6	0.1
4,5	XXX	64	102	6	0.1
4,6	XXX	64	102	6	0.1
4,7	XXX	64	102	6	0.1
4,8	XXX	78	116	6	0.1
4,9	XXX	78	116	6	0.1
5	XXX	78	116	6	0.1
5,1	XXX	78	116	6	0.125
5,2	XXX	78	116	6	0.125
5,3	XXX	78	116	6	0.125
5,4	XXX	78	116	6	0.125
5,5	XXX	78	116	6	0.125
5,6	XXX	78	116	6	0.125
5,7	XXX	78	116	6	0.125
5,8	XXX	78	116	6	0.125
5,9	XXX	78	116	6	0.125
6	XXX	78	116	6	0.125
6,1	XXX	108	146	8	0.15
6,2	XXX	108	146	8	0.15
6,3	XXX	108	146	8	0.15
6,4	XXX	108	146	8	0.15
6,5	XXX	108	146	8	0.15
6,6	XXX	108	146	8	0.15
6,7	XXX	108	146	8	0.15
6,8	XXX	108	146	8	0.15
6,9	XXX	108	146	8	0.15
7	XXX	108	146	8	0.15

∅ h7	1IE 12 3225 GARANT Master Steel SPEED solid carbide drill, plain shank DIN 6535 HA		L_{tot}		< 1100 N f
mm	TiAlN	mm	mm	mm	mm/rev.
7,1	XXX	108	146	8	0.15
7,2	XXX	108	146	8	0.15
7,3	XXX	108	146	8	0.15
7,4	XXX	108	146	8	0.15
7,5	XXX	108	146	8	0.15
7,6	XXX	108	146	8	0.15
7,7	XXX	108	146	8	0.15
7,8	XXX	108	146	8	0.15
7,9	XXX	108	146	8	0.15
8	XXX	108	146	8	0.15
8,1	XXX	120	162	10	0.18
8,2	XXX	120	162	10	0.18
8,3	XXX	120	162	10	0.18
8,4	XXX	120	162	10	0.18
8,5	XXX	120	162	10	0.18
8,6	XXX	120	162	10	0.18
8,7	XXX	120	162	10	0.18
8,8	XXX	120	162	10	0.18
8,9	XXX	120	162	10	0.18
9	XXX	120	162	10	0.18
9,1	XXX	120	162	10	0.18
9,2	XXX	120	162	10	0.18
9,3	XXX	120	162	10	0.18
9,4	XXX	120	162	10	0.18
9,5	XXX	120	162	10	0.18
9,6	XXX	120	162	10	0.18
9,7	XXX	120	162	10	0.18
9,8	XXX	120	162	10	0.18
9,9	XXX	120	162	10	0.18
10	XXX	120	162	10	0.18
10,1	XXX	156	204	12	0.2
10,2	XXX	156	204	12	0.2
10,3	XXX	156	204	12	0.2
10,4	XXX	156	204	12	0.2
10,5	XXX	156	204	12	0.2
10,6	XXX	156	204	12	0.2
10,7	XXX	156	204	12	0.2
10,8	XXX	156	204	12	0.2
10,9	XXX	156	204	12	0.2
11	XXX	156	204	12	0.2
11,1	XXX	156	204	12	0.2

∅ h7	1IE 12 3225 GARANT Master Steel SPEED solid carbide drill, plain shank DIN 6535 HA		L_{tot}		< 1100 N f
mm	TiAlN	mm	mm	mm	mm/rev.
11,2	XXX	156	204	12	0.2
11,3	XXX	156	204	12	0.2
11,4	XXX	156	204	12	0.2
11,5	XXX	156	204	12	0.2
11,6	XXX	156	204	12	0.2
11,7	XXX	156	204	12	0.2
11,8	XXX	156	204	12	0.2
11,9	XXX	156	204	12	0.2
12	XXX	156	204	12	0.2
12,2	XXX	182	230	14	0.23
12,5	XXX	182	230	14	0.23
12,8	XXX	182	230	14	0.23
13	XXX	182	230	14	0.23
13,2	XXX	182	230	14	0.23
13,5	XXX	182	230	14	0.23
13,8	XXX	182	230	14	0.23
14	XXX	182	230	14	0.23
14,2	XXX	208	260	16	0.26
14,5	XXX	208	260	16	0.26
14,8	XXX	208	260	16	0.26
15	XXX	208	260	16	0.26
15,2	XXX	208	260	16	0.26
15,5	XXX	208	260	16	0.26
15,8	XXX	208	260	16	0.26
16	XXX	208	260	16	0.26
16,2	XXX	234	285	18	0.29
16,5	XXX	234	285	18	0.29
16,8	XXX	234	285	18	0.29
17	XXX	234	285	18	0.29
17,2	XXX	234	285	18	0.29
17,5	XXX	234	285	18	0.29
17,8	XXX	234	285	18	0.29
18	XXX	234	285	18	0.29
18,2	XXX	258	310	20	0.325
18,5	XXX	258	310	20	0.325
18,8	XXX	258	310	20	0.325
19	XXX	258	310	20	0.325
19,2	XXX	258	310	20	0.325
19,5	XXX	258	310	20	0.325
19,8	XXX	258	310	20	0.325
20	XXX	258	310	20	0.325

Solid carbide | Standard | 12×D | h7 | 3 | 140° | h6 DIN 6535 HA | 25 bar | HPC

GARANT Master Steel FEED solid carbide drill

3-flute drill, specially developed for **use at very high feed rates**. Outstandingly suitable for **machines with high installed power** and stable operating conditions.

- Special cutter geometry with stable cutting edges and large clearance at the centre enables very high feed rates.
- The patented tip is optimised for chip flow and generates low cutting pressure with good chip breakage.

The **sector-leading technology of the drill point** guarantees **optimum self-centring behaviour.** 3 guide chamfers guarantee a stable exit from the hole and an exact roundness of the hole.

Recommendation: Maximum drilling depth:
flute length (see table) less 1.5×nominal ∅.

Note:	For process reliability when using the 12×D drill, an initial centre drilling with an NC spotting drill No. 121130 with **155° point angle** is necessary.

plain shank DIN 6535 HA 12 3235

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 900 N	> 900 N	> 850 N	GG	GGG	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	M	M	S	K	K						
12 3235				120	110	100	90	70	60				55	50	40	120	80	●		●	●		

∅ h7	11E	12 3235		L_{tot}		< 1100 N f
		GARANT Master Steel FEED solid carbide drill, plain shank				
		DIN 6535 HA				
mm		TiAlN	mm	mm	mm	mm/rev.
4		XXX	64	102	6	0.28
4,1		XXX	64	102	6	0.28
4,2		XXX	64	102	6	0.28
4,3		XXX	64	102	6	0.28
4,4		XXX	64	102	6	0.28
4,5		XXX	64	102	6	0.28
4,6		XXX	64	102	6	0.28
4,7		XXX	64	102	6	0.28
4,8		XXX	78	116	6	0.28
4,9		XXX	78	116	6	0.28
5		XXX	78	116	6	0.28
5,1		XXX	78	116	6	0.32
5,2		XXX	78	116	6	0.32
5,3		XXX	78	116	6	0.32
5,4		XXX	78	116	6	0.32
5,5		XXX	78	116	6	0.32
5,6		XXX	78	116	6	0.32
5,7		XXX	78	116	6	0.32
5,8		XXX	78	116	6	0.32
5,9		XXX	78	116	6	0.32
6		XXX	78	116	6	0.32
6,1		XXX	108	146	8	0.37
6,2		XXX	108	146	8	0.37
6,3		XXX	108	146	8	0.37
6,4		XXX	108	146	8	0.37
6,5		XXX	108	146	8	0.37
6,6		XXX	108	146	8	0.37
6,7		XXX	108	146	8	0.37
6,8		XXX	108	146	8	0.37
6,9		XXX	108	146	8	0.37
7		XXX	108	146	8	0.37
7,1		XXX	108	146	8	0.37
7,2		XXX	108	146	8	0.37
7,3		XXX	108	146	8	0.37
7,4		XXX	108	146	8	0.37
7,5		XXX	108	146	8	0.37
7,6		XXX	108	146	8	0.37
7,7		XXX	108	146	8	0.37

∅ h7	11E	12 3235		L_{tot}		< 1100 N f
		GARANT Master Steel FEED solid carbide drill, plain shank				
		DIN 6535 HA				
mm		TiAlN	mm	mm	mm	mm/rev.
7,8		XXX	108	146	8	0.37
7,9		XXX	108	146	8	0.37
8		XXX	108	146	8	0.37
8,1		XXX	120	162	10	0.44
8,2		XXX	120	162	10	0.44
8,3		XXX	120	162	10	0.44
8,4		XXX	120	162	10	0.44
8,5		XXX	120	162	10	0.44
8,6		XXX	120	162	10	0.44
8,7		XXX	120	162	10	0.44
8,8		XXX	120	162	10	0.44
8,9		XXX	120	162	10	0.44
9		XXX	120	162	10	0.44
9,1		XXX	120	162	10	0.44
9,2		XXX	120	162	10	0.44
9,3		XXX	120	162	10	0.44
9,4		XXX	120	162	10	0.44
9,5		XXX	120	162	10	0.44
9,6		XXX	120	162	10	0.44
9,7		XXX	120	162	10	0.44
9,8		XXX	120	162	10	0.44
9,9		XXX	120	162	10	0.44
10		XXX	120	162	10	0.44
10,1		XXX	156	204	12	0.5
10,2		XXX	156	204	12	0.5
10,3		XXX	156	204	12	0.5
10,4		XXX	156	204	12	0.5
10,5		XXX	156	204	12	0.5
10,6		XXX	156	204	12	0.5
10,7		XXX	156	204	12	0.5
10,8		XXX	156	204	12	0.5
10,9		XXX	156	204	12	0.5
11		XXX	156	204	12	0.5
11,1		XXX	156	204	12	0.5
11,2		XXX	156	204	12	0.5
11,3		XXX	156	204	12	0.5
11,4		XXX	156	204	12	0.5
11,5		XXX	156	204	12	0.5

∅ h7	11E	12 3235		L_{tot}		< 1100 N f
		GARANT Master Steel FEED solid carbide drill, plain shank				
		DIN 6535 HA				
mm		TiAlN	mm	mm	mm	mm/rev.
11,6		XXX	156	204	12	0.5
11,7		XXX	156	204	12	0.5
11,8		XXX	156	204	12	0.5
11,9		XXX	156	204	12	0.5
12		XXX	156	204	12	0.5
12,2		XXX	182	230	14	0.56
12,5		XXX	182	230	14	0.56
12,8		XXX	182	230	14	0.56
13		XXX	182	230	14	0.56
13,2		XXX	182	230	14	0.56
13,5		XXX	182	230	14	0.56
13,8		XXX	182	230	14	0.56
14		XXX	182	230	14	0.56
14,2		XXX	208	260	16	0.61
14,5		XXX	208	260	16	0.61
14,8		XXX	208	260	16	0.61
15		XXX	208	260	16	0.61
15,2		XXX	208	260	16	0.61
15,5		XXX	208	260	16	0.61
15,8		XXX	208	260	16	0.61
16		XXX	208	260	16	0.61
16,2		XXX	234	285	18	0.66
16,5		XXX	234	285	18	0.66
16,8		XXX	234	285	18	0.66
17		XXX	234	285	18	0.66
17,2		XXX	234	285	18	0.66
17,5		XXX	234	285	18	0.66
17,8		XXX	234	285	18	0.66
18		XXX	234	285	18	0.66
18,2		XXX	258	310	20	0.69
18,5		XXX	258	310	20	0.69
18,8		XXX	258	310	20	0.69
19		XXX	258	310	20	0.69
19,2		XXX	258	310	20	0.69
19,5		XXX	258	310	20	0.69
19,8		XXX	258	310	20	0.69
20		XXX	258	310	20	0.69

Solid carbide | Standard | 12×D | h7 | 2 | 135° | h6 DIN 6535 HA | 25 bar | HPC

Garant Solid carbide HPC drill

Cutting chisel edge with **high centring accuracy** due to **strong core and special point geometry.**
Particularly high alignment accuracy due to **4 guide chamfers** which stabilise the drill even at extreme depths!
Convex cutting edges with honed edges and special flute profile for **short chips**, even on long chipping materials.

Advantage: **High process reliability and surface quality of the hole.**

Recommendation: **Maximum drilling depth:**
flute length (see table) less 1.5×nominal Ø.

Note: For process reliability when using the 12×D drill, an initial centre drilling with NC spotting drills No. 121068 – 121130 is necessary.
Form HB and HE are supplied at the same price as HA.
Form **HB:** order with **No. 123302**.
Form **HE:** order with **No. 123301 + 129100HE**.
NEW GENERATION AVAILABLE!
Recommended successor products are No. 123225 and 123235.

Plain shank DIN 6535 HA 12 3301

Weldon shank DIN 6535 HB 12 3302

Whistle-Notch shank DIN 6535 HE 12 3301 + 129100HE

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	Uni
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	K	
12 3301		180	140	110	90	80	50	35						40	35		70	●

Ø h7 mm	12 3301 Solid carbide HPC drill plain shank DIN 6535 HA TiAlN	mm	L_{tot} mm	mm	< 1100 N f mm/rev.
3	XXX	54	92	6	0.1
3,3	XXX	54	92	6	0.1
3,4	XXX	54	92	6	0.1
3,5	XXX	54	92	6	0.1
3,8	XXX	64	102	6	0.1
4	XXX	64	102	6	0.1
4,2	XXX	64	102	6	0.1
4,5	XXX	64	102	6	0.1
4,8	XXX	78	116	6	0.1
5	XXX	78	116	6	0.1
5,5	XXX	78	116	6	0.1
5,8	XXX	78	116	6	0.1
6	XXX	78	116	6	0.15
6,3	XXX	108	146	8	0.15
6,5	XXX	108	146	8	0.15

Ø h7 mm	12 3301 Solid carbide HPC drill plain shank DIN 6535 HA TiAlN	mm	L_{tot} mm	mm	< 1100 N f mm/rev.
6,6	XXX	108	146	8	0.15
6,8	XXX	108	146	8	0.15
7	XXX	108	146	8	0.15
7,8	XXX	108	146	8	0.15
8	XXX	108	146	8	0.15
8,5	XXX	120	162	10	0.15
9	XXX	120	162	10	0.2
10	XXX	120	162	10	0.2
10,5	XXX	156	204	12	0.2
11	XXX	156	204	12	0.2
11,5	XXX	156	204	12	0.2
12	XXX	156	204	12	0.26
13	XXX	182	230	14	0.26
13,5	XXX	182	230	14	0.26
14	XXX	182	230	14	0.26

Solid carbide | Standard | 12×D | h7 | 2 | 135° | h6 DIN 6535 HA | 25 bar

HOLEX Solid carbide high performance drill

12 3303 – **HOLEX Pro Steel:**
Straight major cutting edges and a **special flute profile** ensure good chip evacuation. The robust cutting edge geometry ensures high-performance drilling with good process reliability. A wide range of applications in steel materials thanks to a combination of tough ultra-fine grain carbide and extremely wear-resistant coating.

Recommendation: Maximum drilling depth:
Flute length (see table) less 1.5×nominal Ø.

Note:
For process reliability when using the 12×D drill, an initial centre drilling with NC spotting drills No. 121068 - 121130 or HOLEX Pro Steel No. 122501 is necessary.

12 3303 – Form HB and HE supplied at the same price as HA.
Order form **HB:** state **No. 123304**.
Order form **HE:** state **No. 123309**.

12 3306 – **NEW GENERATION AVAILABLE!**
Recommended successor product is No. 123303.

HPC
Plain shank DIN 6535 HA 12 3303

HPC
Weldon shank DIN 6535 HB 12 3304

HPC
Whistle-Notch shank DIN 6535 HE 12 3309

Plain shank DIN 6535 HA 12 3306

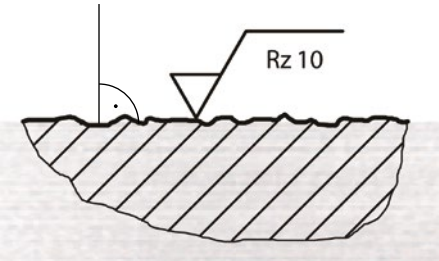
Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	INOX < 900 N	INOX > 900 N	GG	GGG	GG(G)	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	M	M	K	K	K						
12 3303	250	200	160	**125**	**115**	**95**	**90**	**65**					**35**	30	**100**	**65**		●		●	●		
12 3306		175	135	105	**85**	**75**	**45**	**30**					35	30			**65**	●		●			

Ø h7	12 3303	12 3306					Ø h7	12 3303	12 3306				
	HOLEX Pro Steel solid carbide drill, plain shank	Solid carbide high performance drill plain shank		L_{tot}		< 900 N f		HOLEX Pro Steel solid carbide drill, plain shank	Solid carbide high performance drill plain shank		L_{tot}		< 900 N f
	DIN 6535 HA					12 3303		DIN 6535 HA					12 3303
mm	TiAlN	TiN	mm	mm	mm	mm/rev.	mm	TiAlN	TiN	mm	mm	mm	mm/rev.
3	XXX	XXX	54	92	6	0.13	7,4	XXX	–	108	146	8	0.16
3,1	XXX	–	54	92	6	0.13	7,5	XXX	XXX	108	146	8	0.16
3,3	XXX	XXX	54	92	6	0.13	7,7	XXX	–	108	146	8	0.16
3,4	XXX	XXX	54	92	6	0.13	7,8	XXX	XXX	108	146	8	0.16
3,5	XXX	XXX	54	92	6	0.13	8	XXX	XXX	108	146	8	0.16
3,6	XXX	–	54	92	6	0.13	8,1	XXX	–	120	162	10	0.18
3,7	XXX	XXX	54	92	6	0.13	8,2	XXX	–	120	162	10	0.18
3,8	XXX	XXX	64	102	6	0.13	8,5	XXX	XXX	120	162	10	0.18
4	XXX	XXX	64	102	6	0.13	8,6	XXX	–	120	162	10	0.18
4,1	XXX	–	64	102	6	0.13	9	XXX	XXX	120	162	10	0.2
4,2	XXX	XXX	64	102	6	0.13	9,1	XXX	–	120	162	10	0.2
4,3	XXX	–	64	102	6	0.13	9,5	XXX	–	120	162	10	0.2
4,4	XXX	–	64	102	6	0.13	9,8	XXX	XXX	120	162	10	0.2
4,5	XXX	XXX	64	102	6	0.13	9,9	XXX	–	120	162	10	0.2
4,6	XXX	–	64	102	6	0.13	10	XXX	XXX	120	162	10	0.2
4,7	XXX	–	64	102	6	0.13	10,1	XXX	–	156	204	12	0.2
4,8	XXX	XXX	78	116	6	0.13	10,2	XXX	–	156	204	12	0.2
5	XXX	XXX	78	116	6	0.13	10,3	XXX	–	156	204	12	0.2
5,1	XXX	–	78	116	6	0.13	10,5	XXX	XXX	156	204	12	0.2
5,2	XXX	–	78	116	6	0.13	11	XXX	XXX	156	204	12	0.2
5,3	XXX	–	78	116	6	0.13	11,2	XXX	–	156	204	12	0.2
5,5	XXX	XXX	78	116	6	0.13	11,3	XXX	–	156	204	12	0.2
5,6	XXX	–	78	116	6	0.13	11,5	XXX	–	156	204	12	0.2
5,7	XXX	–	78	116	6	0.13	11,8	XXX	–	156	204	12	0.2
5,8	XXX	XXX	78	116	6	0.13	12	XXX	XXX	156	204	12	0.2
5,9	XXX	–	78	116	6	0.13	12,5	XXX	–	182	230	14	0.23
6	XXX	XXX	78	116	6	0.13	13	XXX	XXX	182	230	14	0.23
6,1	XXX	–	108	146	8	0.16	13,5	XXX	–	182	230	14	0.23
6,2	XXX	–	108	146	8	0.16	14	XXX	XXX	182	230	14	0.23
6,3	XXX	XXX	108	146	8	0.16	14,5	XXX	–	208	260	16	0.23
6,4	XXX	–	108	146	8	0.16	14,8	XXX	–	208	260	16	0.23
6,5	XXX	XXX	108	146	8	0.16	15	XXX	–	208	260	16	0.23
6,6	XXX	XXX	108	146	8	0.16	15,8	XXX	–	208	260	16	0.23
6,8	XXX	XXX	108	146	8	0.16	16	XXX	–	208	260	16	0.23
6,9	XXX	–	108	146	8	0.16	17	XXX	–	234	285	18	0.25
7	XXX	XXX	108	146	8	0.16	17,5	XXX	–	234	285	18	0.25
7,2	XXX	–	108	146	8	0.16	18	XXX	–	234	285	18	0.25

Process-reliable deep-hole drilling in 4 working steps

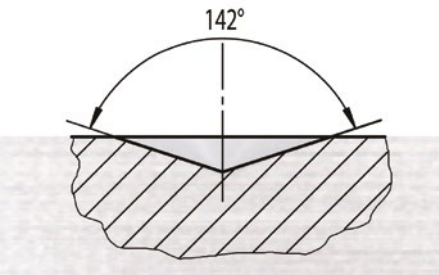
Pre-condition: Face milling

At right angles to the hole axis, with the lowest possible **surface roughness.**



1. Centring

NC spotting drill with 142° point angle for **exact pitch.**

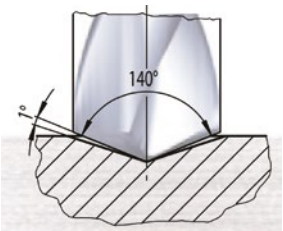


NC spot drilling is advisable for process reliability. (12 1068 – 12 1121)

2. Pilot hole drilling

Minimum drilling depth (depends on the desired deep-hole drill) **according to depth table**. The use of a pilot hole eases the subsequent deep-hole drilling operation and improves the tool life of the deep hole drill. **The generation of a pilot hole** is a necessary part of the production technique. It ensures **process reliability** and **reduces the costs.**

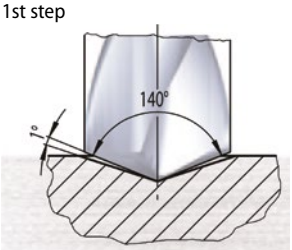
for deep-hole drilling 16 – 30×D



Pilot hole drilling up to 6×D

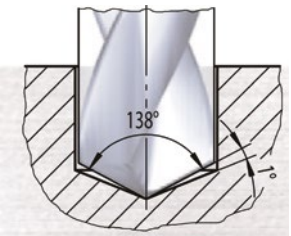
for deep-hole drilling 40 – 50×D

1st step



Pilot hole drilling up to 6×D

2nd step



***Co*-pilot hole drilling up to 20×D**

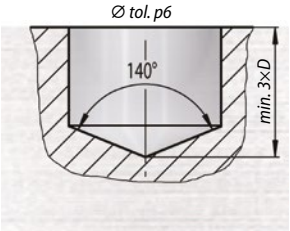
Depth table

Deep-hole drill	Pilot hole drilling (minimum drill depth)
16×D (12 3588 / 12 3688)	**4×D** (12 2606 / 12 2736) (or centring with a 142° NC spotting drill)
20×D (12 3590 / 12 3690)	**6×D** (12 2606 / 12 2736)
25×D (12 3593 / 12 3693)	**6×D** (12 2606 / 12 2736)
30×D (12 3595 / 12 3695)	**6×D** (12 2606 / 12 2736)
40×D (12 3740)	**6×D** and **20×D** (12 2736 / 12 3691)
50×D (12 3750)	**6×D** and **20×D** (12 2736 / 12 3691)

3. Mounting a counterbore

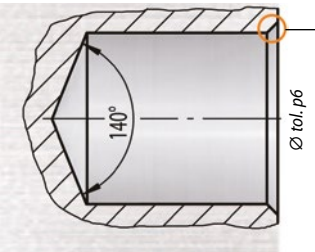
Vertical machining:

A counterbore is recommended, but is not absolutely necessary if a centre bore has been applied.



Horizontal machining:

After drilling the pilot hole, apply a **90° or 60° counterbore.**



Counterbore necessary

A counterbore should be drilled to make the introduction of the deep-hole drill easier.

Solid carbide or HSS countersink, green ring or blue ring.

4a. Deep-hole drilling 16×D – 30×D (after pilot drilling)

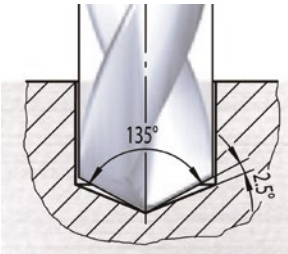
Positioning

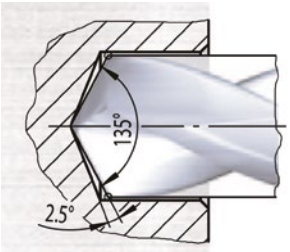
Vertical machining:
Introduce the deep-hole drill with **anti-clockwise rotation** up to 0.5×D before the end of the pilot hole, without through-coolant.

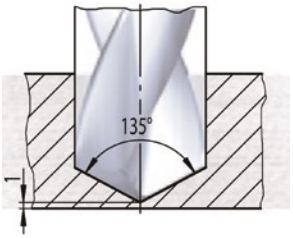
Horizontal machining:
Position the cutting corners of the deep-hole drill **vertically,** at zero rotation introduce the drill into the hole as far as 0.5×D short of the end of the pilot hole.

Implementation

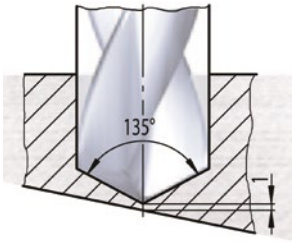
Drilling the deep hole:
Work without a drilling cycle (no chip evacuation necessary).
Switch on the through-coolant, smoothly increase the rotational speed to the final working value v_c. When drilling a through hole, approx. 1 mm before the deep-hole drill breaks through, reduce the feed rate.







Breaking through at right angles:
Reduce feed rate to 50 %.



Breaking through obliquely and breaking through into cross holes:
Reduce feed rate to 40 %.

Retracting the deep-hole drill:
Before backing out the deep-hole drill **switch off the through-coolant, smoothly reduce the rotational speed** (n = 300 rpm) and with **reduced rapid advance** (v_f = 1000 mm/min) back the drill **out of the hole.**

4b. Deep-hole drilling 40×D – 50×D (after pilot and co-pilot drilling)

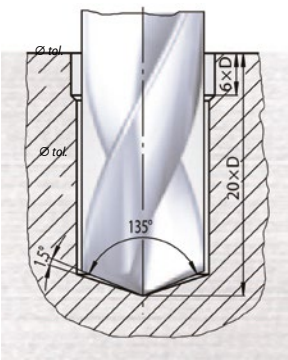
Positioning

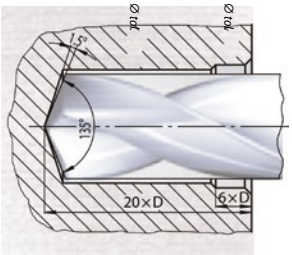
Vertical machining:
Introduce the deep-hole drill with **anti-clockwise rotation** up to 0.5×D before the end of the pilot hole, without through-coolant.

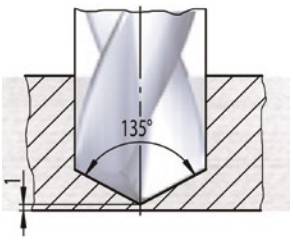
Horizontal machining:
Position the cutting corners of the deep-hole drill **vertically,** at zero rotation introduce the drill into the hole as far as 0.5×D short of the end of the pilot hole.

Implementation

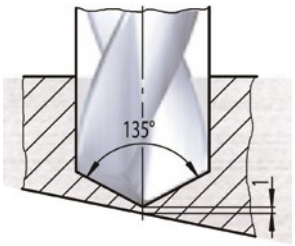
Drilling the deep hole:
Work without a drilling cycle (no chip evacuation necessary).
Switch on the through-coolant, smoothly increase the rotational speed to the final working value. Caution, under unfavourable conditions it may be necessary to pull the drill back from the bottom of the hole in order to improve the process reliability.
When drilling a through hole, approx. 1 mm before the deep-hole drill breaks through, reduce the feed rate.







Breaking through at right angles:
Reduce feed rate to 50 %.



Breaking through obliquely and breaking through into cross holes:
Reduce feed rate to 40 %.

Retracting the deep-hole drill:
Before backing out the deep-hole drill **switch off the through-coolant, smoothly reduce the rotational speed** (n = 300 rpm) and with **reduced rapid advance** (v_f = 1000 mm/min) back the drill **out of the hole.**

Safety instruction

No deep-hole drills ≥ 16×D **may be operated at v_c max without pilot hole** guidance.

Solid carbide | Standard | h7 | 2 | 135° | h5 DIN 6535 HA | 40 bar | HPC

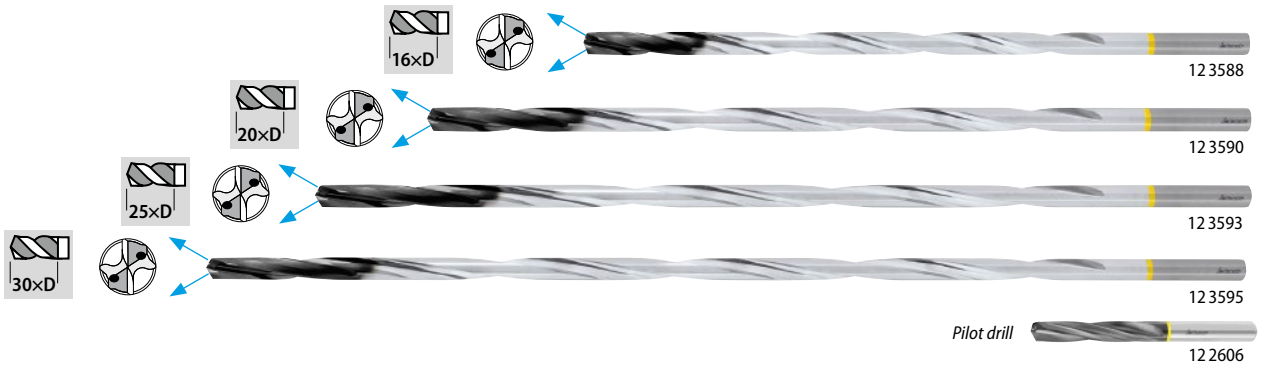
Garant

Solid carbide HPC deep hole drill

Spiral fluted, with **6 guide chamfers** and internal cooling channels. New generation of high performance deep hole drills in the HPC range.
With 135° point angle and special **h7 cutting edge tolerance** for optimum generation of a deep hole.
High roundness and alignment accuracy of the deep hole.

Recommendation: Maximum drilling depth:
flute length (see table) less 1.5×nominal Ø.

Note: For process reliability when using the 16×D deep hole drill, an initial centre drilling with No. 121068 – 121130 or 4×D pilot drilling operation with pilot drill No. 122606 is necessary. For deep holes greater than 20×D, a 6×D pilot hole with pilot drill No. 122606 is absolutely essential.
The generation of a pilot hole improves the process reliability. See also pages 118/119.



Suitable for/ v_c [m/min]	Alu	Alu	Alu cast > 10 % Si	PMMA acrylic	PE-HD	PA 66	PEEK	PF 31	AFRP aramid	PVDF GF20	POM GF25	PA 66 GF30	PEEK GF30	PTFE CF25	Cu	CuZn	GRP	CRP					
ISO code	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N					
12 3588	160	190	140	150			120			90		80	70	80	90	115	80	80		●	●		
12 3590	150	180	130	135			105			80		70	65	70	90	100	70	70		●	●		
12 3593	130	160	120	120			95			70		65	55	65	75	90	65	65		●	●		
12 3595	120	150	110	120			95			70		65	55	65	70	80	65	65		●	●		

Solid carbide HPC deep-hole drill
plain shank

Ø h7	11E 12 3588	11E 12 3590	11E 12 3593	11E 12 3595					L_{tot}					Alu f	
	DIN 6535 HA 16×D	DIN 6535 HA 20×D	DIN 6535 HA 25×D	DIN 6535 HA 30×D	12 3588	12 3590	12 3593	12 3595	12 3588	12 3590	12 3593	12 3595		12 3588 12 3590 12 3593	12 3595
mm	DLC	DLC	DLC	DLC	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm/rev.	mm/rev.
2	XXX	XXX	XXX	XXX	42	50	60	70	84	92	104	115	4	0.1	0.08
2,2	XXX	XXX	XXX	XXX	42	50	60	70	84	92	104	115	4	0.14	0.11
2,3	XXX	XXX	XXX	XXX	42	50	60	70	84	92	104	115	4	0.14	0.11
2,4	XXX	XXX	XXX	XXX	54	70	80	90	96	112	125	138	4	0.14	0.11
2,5	XXX	XXX	XXX	XXX	54	70	80	90	96	112	125	138	4	0.14	0.11
2,7	XXX	XXX	XXX	XXX	54	70	80	90	96	112	125	138	4	0.14	0.11
2,8	XXX	XXX	XXX	XXX	54	70	80	90	96	112	125	138	4	0.14	0.11
3	XXX	XXX	XXX	XXX	60	80	98	105	100	120	135	150	6	0.14	0.11
3,2	XXX	XXX	XXX	XXX	60	80	98	105	100	120	135	150	6	0.18	0.15
3,3	XXX	XXX	XXX	XXX	60	80	110	135	100	120	150	185	6	0.18	0.15
3,5	XXX	XXX	XXX	XXX	60	80	110	135	100	120	150	185	6	0.18	0.15
3,8	XXX	XXX	XXX	XXX	75	90	120	135	115	130	160	185	6	0.18	0.15
4	XXX	XXX	XXX	XXX	75	90	120	135	115	130	160	185	6	0.18	0.15
4,2	XXX	XXX	XXX	XXX	75	110	120	135	115	160	160	185	6	0.22	0.19
4,5	XXX	XXX	XXX	XXX	90	110	135	165	130	160	180	215	6	0.22	0.19
4,8	XXX	XXX	XXX	XXX	90	120	135	165	130	160	180	215	6	0.22	0.19
5	XXX	XXX	XXX	XXX	90	120	135	165	130	160	180	215	6	0.22	0.19
5,5	XXX	XXX	XXX	XXX	108	140	168	180	150	185	205	230	6	0.25	0.22
5,8	XXX	XXX	XXX	XXX	108	140	168	180	150	185	205	230	6	0.25	0.22
6	XXX	XXX	XXX	XXX	108	140	168	180	150	185	205	230	6	0.28	0.22
6,5	XXX	XXX	XXX	XXX	125	160	200	215	165	210	240	280	8	0.28	0.26
6,8	XXX	XXX	XXX	XXX	125	160	200	230	165	210	240	280	8	0.28	0.26
7	XXX	XXX	XXX	XXX	125	160	200	230	165	210	240	280	8	0.28	0.26
7,5	XXX	XXX	XXX	XXX	140	180	220	230	180	230	260	280	8	0.28	0.26
7,8	XXX	XXX	XXX	XXX	140	180	220	265	180	230	260	315	8	0.28	0.26
8	XXX	XXX	XXX	XXX	140	180	220	265	180	230	260	315	8	0.28	0.26
8,5	XXX	XXX	XXX	XXX	160	195	240	295	205	260	285	350	10	0.33	0.3
8,8	XXX	XXX	XXX	XXX	160	230	268	330	205	290	310	380	10	0.33	0.3
9	XXX	XXX	XXX	XXX	160	230	268	330	205	290	310	380	10	0.33	0.3
9,8	XXX	XXX	XXX	XXX	180	230	268	330	225	290	310	380	10	0.33	0.3
10	XXX	XXX	XXX	XXX	180	230	268	330	225	290	310	380	10	0.33	0.3
10,2	XXX	XXX	XXX	XXX	190	268	325	380	240	315	375	430	12	0.37	0.34
10,8	XXX	XXX	XXX	XXX	190	268	325	380	240	315	375	430	12	0.37	0.34
11,8	XXX	XXX	XXX	XXX	215	268	325	380	265	315	375	430	12	0.37	0.34
12	XXX	XXX	XXX	XXX	215	268	325	380	265	315	375	430	12	0.37	0.34

Solid carbide | Standard | h7 | 2 | 135° | h5 DIN 6535 HA | 40 bar | HPC

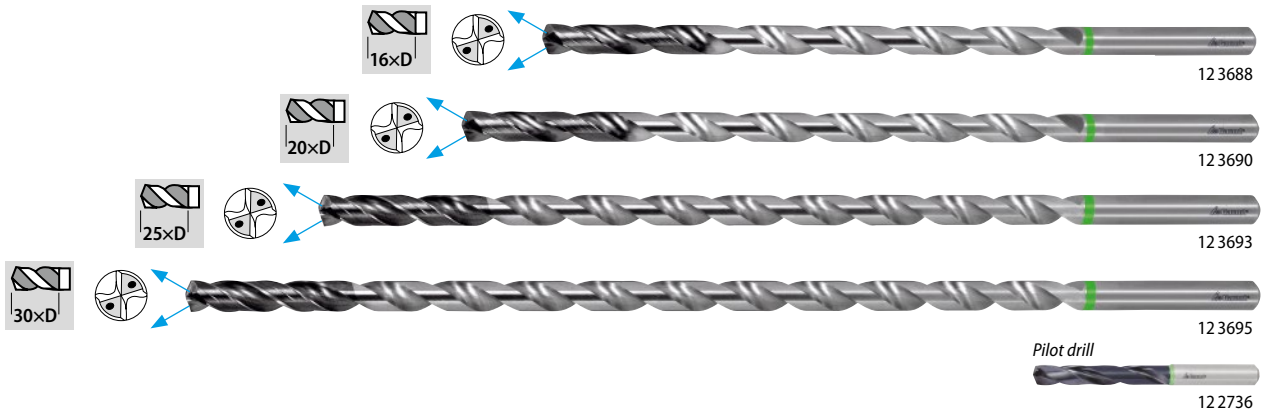
Garant

Solid carbide HPC deep hole drill

Spiral fluted, with **4 guide chamfers** and internal cooling channels. New generation of high performance deep hole drills in the HPC range.
With 135° point angle and special **h7 cutting edge tolerance** for optimum generation of a deep hole.
High roundness and alignment accuracy of the deep hole.

Recommendation: **Maximum drilling depth:**
Flute length (see table) less 1.5×nominal ∅.

Note: For process reliability when using the 16×D deep-hole drill, an initial centre drilling with No. 121068 – 121130 or 4×D pilot drilling operation with pilot drill No. 122736 is necessary. For deep holes from 20×D, a 6×D pilot hole with pilot drill No. 122736 is absolutely essential. **The generation of a pilot hole improves process reliability.** See also pages 116/117.



Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	K						
12 3688				110	95	95	95	75						55	50		100	●		●			
12 3690				105	90	90	90	70						50	45		95	●		●			
12 3693				95	80	80	80	65						50	45		85	●		●			
12 3695				90	75	75	75	60						45	40		80	●		●			

∅ h7	11E 12 3688	11E 12 3690	11E 12 3693	11E 12 3695										
	Solid carbide HPC deep-hole drill plain shank													
	DIN 6535 HA 16×D	DIN 6535 HA 20×D	DIN 6535 HA 25×D	DIN 6535 HA 30×D										< 900 N
	TiAlN	TiAlN	TiAlN	TiAlN					L_{tot}					f
mm					12 3688 mm	12 3690 mm	12 3693 mm	12 3695 mm	12 3688 mm	12 3690 mm	12 3693 mm	12 3695 mm	mm	mm/rev.
2	XXX	XXX	XXX	XXX	42	50	60	70	84	92	104	115	4	0.05
2,2	XXX	XXX	XXX	XXX	42	50	60	70	84	92	104	115	4	0.06
2,3	XXX	XXX	XXX	XXX	42	50	60	70	84	92	104	115	4	0.06
2,4	XXX	XXX	XXX	XXX	54	70	80	90	96	112	125	138	4	0.06
2,5	XXX	XXX	XXX	XXX	54	70	80	90	96	112	125	138	4	0.06
2,7	XXX	XXX	XXX	XXX	54	70	80	90	96	112	125	138	4	0.06
2,8	XXX	XXX	XXX	XXX	54	70	80	90	96	112	125	138	4	0.06
3	XXX	XXX	XXX	XXX	60	80	98	105	100	120	135	150	6	0.06
3,2	XXX	XXX	XXX	XXX	60	80	98	105	100	120	135	150	6	0.08
3,3	XXX	XXX	XXX	XXX	60	80	110	135	100	120	150	185	6	0.08
3,5	XXX	XXX	XXX	XXX	60	80	110	135	100	120	150	185	6	0.08
3,8	XXX	XXX	XXX	XXX	75	90	120	135	115	130	160	185	6	0.08
4	XXX	XXX	XXX	XXX	75	90	120	135	115	130	160	185	6	0.08
4,2	XXX	XXX	XXX	XXX	75	110	120	135	115	160	160	185	6	0.1
4,5	XXX	XXX	XXX	XXX	90	110	135	165	130	160	180	215	6	0.1
4,8	XXX	XXX	XXX	XXX	90	120	135	165	130	160	180	215	6	0.1
5	XXX	XXX	XXX	XXX	90	120	135	165	130	160	180	215	6	0.1
5,5	XXX	XXX	XXX	XXX	108	140	168	180	150	185	205	230	6	0.12
5,8	XXX	XXX	XXX	XXX	108	140	168	180	150	185	205	230	6	0.12
6	XXX	XXX	XXX	XXX	108	140	168	180	150	185	205	230	6	0.12
6,5	XXX	XXX	XXX	XXX	125	160	200	215	165	210	240	280	8	0.14
6,8	XXX	XXX	XXX	XXX	125	160	200	230	165	210	240	280	8	0.14
7	XXX	XXX	XXX	XXX	125	160	200	230	165	210	240	280	8	0.14
7,5	XXX	XXX	XXX	XXX	140	180	220	230	180	230	260	280	8	0.14
7,8	XXX	XXX	XXX	XXX	140	180	220	265	180	230	260	315	8	0.14
8	XXX	XXX	XXX	XXX	140	180	220	265	180	230	260	315	8	0.14
8,5	XXX	XXX	XXX	XXX	160	195	240	295	205	260	285	350	10	0.16
8,8	XXX	XXX	XXX	XXX	160	230	268	330	205	290	310	380	10	0.16
9	XXX	XXX	XXX	XXX	160	230	268	330	205	290	310	380	10	0.16
9,8	XXX	XXX	XXX	XXX	180	230	268	330	225	290	310	380	10	0.16
10	XXX	XXX	XXX	XXX	180	230	268	330	225	290	310	380	10	0.16
10,2	XXX	XXX	XXX	XXX	190	268	325	380	240	315	375	430	12	0.18
10,8	XXX	XXX	XXX	XXX	190	268	325	380	240	315	375	430	12	0.18
11,8	XXX	XXX	XXX	XXX	215	268	325	380	265	315	375	430	12	0.18
12	XXX	XXX	XXX	XXX	215	268	325	380	265	315	375	430	12	0.18

Solid carbide | Standard | 2 | h5 DIN 6535 HA | 40 bar | HPC

Garant

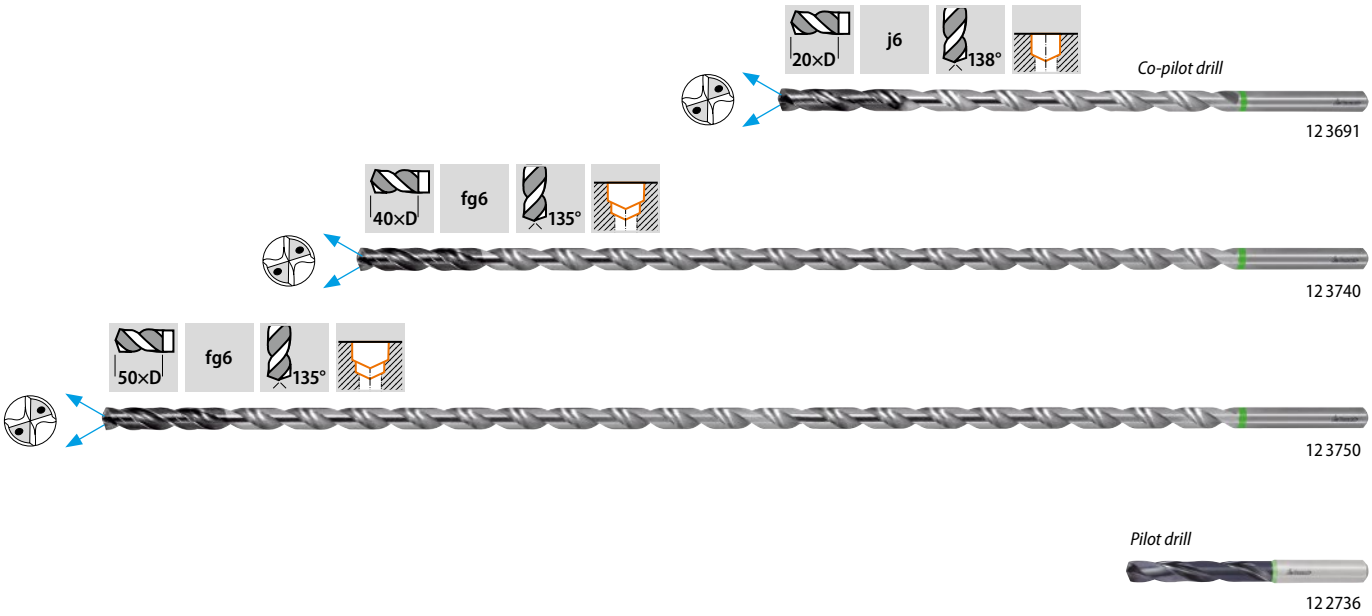
Solid carbide HPC deep hole drill

12 3691 – Helical fluted, with **4 guide chamfers** and internal coolant holes. New generation of high performance co-pilot drills in the HPC range.
With 138° point angle and special **j6 cutting edge tolerance** for optimum generation of a co-pilot hole.
High roundness and alignment accuracy of the co-pilot hole.

12 3740/3750 – Spiral fluted, with **4 guide chamfers** and internal cooling channels. New generation of high performance deep hole drills in the HPC range.
With 135° point angle and special **fg6 cutting edge tolerance** for optimum generation of deep holes.
High roundness and alignment accuracy of the deep hole.

Recommendation: Maximum drilling depth:
Flute length (see table) less 1.5×nominal ∅.

Note: To achieve good process reliability with 40×D and 50×D deep-hole drills it is absolutely essential to drill 6×D pilot hole with a No. 122736 and a 20×D co-pilot hole with a No. 123691 co-pilot drill.
The generation of a pilot hole improves the process reliability. See also pages 116/117.



Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	K						
12 3691				105	90	90	90	70						50	45		95	●		●			
12 3740				75	60	60	60	50						40	35		65	●		●			
12 3750				65	50	50	50	45						35	30		55	●		●			

∅	12 3691 Solid carbide HPC co-pilot drill, plain shank DIN 6535 HA 20×D TiAlN	12 3740 Solid carbide HPC deep-hole drill plain shank DIN 6535 HA 40×D TiAlN	12 3750 DIN 6535 HA 50×D TiAlN	L_1 12 3691	L_1 12 3740	L_1 12 3750	L_{tot} 12 3691	L_{tot} 12 3740	L_{tot} 12 3750	d	< 900 N f
mm				mm	mm	mm	mm	mm	mm	mm	mm/rev.
3	XXX	XXX	XXX	80	150	175	120	195	220	6	0.05
4	XXX	XXX	XXX	90	175	220	130	220	265	6	0.06
4,2	XXX	XXX	XXX	110	200	245	160	245	290	6	0.08
4,5	XXX	XXX	XXX	110	200	245	160	245	290	6	0.08
4,8	XXX	XXX	XXX	120	230	275	160	275	320	6	0.08
5	XXX	XXX	XXX	120	230	275	160	275	320	6	0.08
5,5	XXX	XXX	XXX	140	260	310	185	305	355	6	0.1
5,8	XXX	XXX	XXX	140	260	315	185	305	355	6	0.1
6	XXX	XXX	XXX	140	260	315	185	305	355	6	0.1
6,5	XXX	XXX	XXX	160	300	350	210	345	395	8	0.1
6,8	XXX	XXX	XXX	160	300	380	210	345	425	8	0.12
7	XXX	XXX	–	160	300	–	210	345	–	8	0.12
7,5	XXX	XXX	–	180	340	–	230	385	–	8	0.12
7,8	XXX	XXX	–	180	340	–	230	385	–	8	0.12
8	XXX	XXX	–	180	340	–	230	385	–	8	0.12
8,5	XXX	XXX	–	195	380	–	260	430	–	10	0.14
8,8	XXX	XXX	–	230	380	–	290	430	–	10	0.14
9	XXX	XXX	–	230	380	–	290	430	–	10	0.14

Garant **GARANT Master Steel DEEP**

new

The market revolution in deep hole drilling.
The new system offers unique advantages right across the board.

Advantage 1: Significantly higher metal removal rates:

- Optimised point geometry with stable cutting edges and large flutes
- Significantly increased cutting data in comparison to the predecessor product and to the competition
- Extreme tool stability – even at high cutting data, thanks to the greatly strengthened core paired with innovative shape of the coolant channel
- High temperature-resistant TiAlN-based multi-layer coating and all-round cooling thanks to guide rings at the drill tip

Up to 30 % higher metal removal rate

Strengthened core.
Very high tool stability

Advantage 2: Maximum process reliability:

Extreme drilling depths demand a high degree of process reliability – especially when we are talking about expensive components. GARANT Master Steel DEEP offers reliability in diverse materials at the high-end level:

- Tools exactly matched to the overall deep-hole drilling system
- Improved point geometry to create an optimum chip-breaking behaviour for using general-purpose materials in steels, stainless steel and also cast iron
- Optimum evacuation of chips – even from extreme drilling depths and at high metal removal rates, due to the unequal helical pitch of the flutes, thereby drastically accelerating the evacuation of chips from the drill hole
- Precise guidance by guide rings and addition guide lands permit very high drill hold quality
- No co-pilot hole necessary – only a simple pilot hole
- Multiple regrinding capability of the tool to the level of a new tool
- Coated head and polished flutes for an optimum flow of chips

Stability increased by more than 70 %

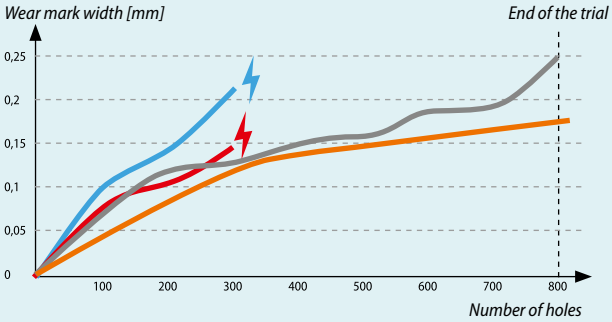
Dynamic helical pitch
Significantly accelerated chip evacuation

Advantage 3: Outstanding tool life:

Comprehensive tests prove it: The GARANT Master Steel DEEP sets new standards for tool wear and long tool life:

Significantly longer tool life than comparable conventional tools available on the market

- Outstanding protection against tool breakage thanks to optimised and innovative coolant channel design
- Low-vibration running combined with increased cutting data
- Extremely wear-resistant and heat-resistant TiAlN-based multi-lager coating
- Micrograin substrate of the latest generation



Drilling trial:
30 × D in 42 CrMo4 (1.7225)
∅ = 6 mm
v_c = 85 m
f = 0.14 mm/rev

- Competitor 1
- Competitor 2
- Competitor 3
- GARANT Master Steel DEEP

Up to 300 % longer tool life

All-round guide rings
Precise guidance

Conclusion: Technical perfection coupled with optimum price-benefit ratio – see for yourself!

Solid carbide | Standard | 2 | h5 DIN 6535 HA | 40 bar | HPC

Garant

GARANT Master Steel DEEP solid carbide deep hole drill and pilot drill

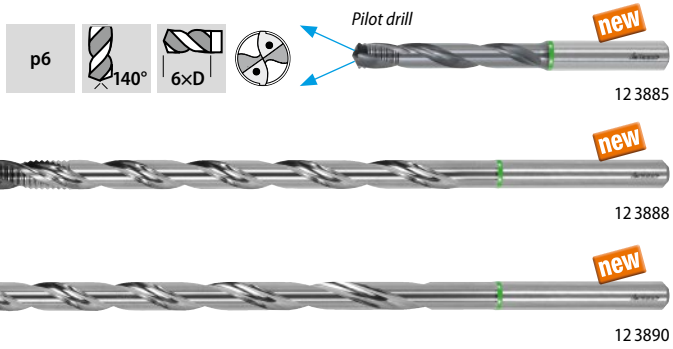
Excellent chip evacuation due to the unequal helical pitch of the flutes, guide rings and additional flute lands for very high precision when drilling. **Maximum process reliability** due to exactly matching tools within the overall system. Drilling up to the maximum depth without a pilot drill. **Significantly increased tool stability** due to the substantially strengthened core. **Increased metal removal rates** and **outstanding tool lives** lead to an economical high-end drilling process.

Recommendation: Maximum drilling depth:
flute length (see table) less 1.5×nominal ∅.

Note:

12 3885 – Form HB and HE supplied at the same price as HA.
Form **HB:** order with **No. 123886**.
Form **HE:** order with **No. 123885 + 129100HE**.

12 3888/3890 – For process reliability when using the 16×D deep-hole drill, an initial centre drilling with No. 121068 – 121130 or at least 4×D pilot drilling operation with pilot drill No. 123885 is necessary. For deep holes greater than 20×D, a pilot hole to the maximum depth of the hole with a pilot drill No. 123885 is absolutely essential. The generation of a pilot hole improves process reliability. **The specified L/D ratio gives the minimum achievable depth of hole with the respective deep-hole drill.**



Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	Uni				
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	K					
12 3885				170	150	130	110	90						75	70	35	120	●		●	○	
12 3888				125	115	110	110	90						65	60	30	115	●		●	○	
12 3890				120	110	105	105	85						65	60	25	110	●		●	○	

∅	1E 12 3885	10E 12 3888	10E 12 3890										
	GARANT Master Steel SPEED solid carbide pilot drill, plain shank	GARANT Master Steel SPEED solid carbide deep-hole drill, plain shank											
	DIN 6535 HA 6×D	DIN 6535 HA 16×D	DIN 6535 HA 20×D										
				12 3885	12 3888	12 3890	12 3885	12 3888	12 3890		< 900 N	12 3885	12 3888 12 3890
mm	TiAlN	TiAlN	TiAlN	mm	mm	mm	mm	mm	mm	mm	f	mm/rev.	mm/rev.
3	XXX	XXX	XXX	28	60	72	66	103	115	6		0.08	0.07
3,2	XXX	XXX	XXX	28	60	72	66	103	115	6		0.12	0.09
3,3	XXX	XXX	XXX	28	65	79	66	108	122	6		0.12	0.09
3,5	XXX	XXX	XXX	28	65	79	66	108	122	6		0.12	0.09
3,8	XXX	XXX	XXX	36	71	86	74	114	129	6		0.12	0.09
4	XXX	XXX	XXX	36	76	93	74	118	135	6		0.12	0.09
4,2	XXX	XXX	XXX	36	84	102	74	126	144	6		0.15	0.11
4,3	XXX	XXX	XXX	36	84	102	74	126	144	6		0.15	0.11
4,5	XXX	XXX	XXX	36	84	102	74	126	144	6		0.15	0.11
5	XXX	XXX	XXX	44	93	113	82	135	155	6		0.15	0.11
5,5	XXX	XXX	XXX	44	106	128	82	147	169	6		0.18	0.14
6	XXX	XXX	XXX	44	111	135	82	151	175	6		0.18	0.14
6,5	XXX	XXX	XXX	53	120	146	91	162	188	8		0.21	0.16
6,8	XXX	XXX	XXX	53	130	158	91	172	200	8		0.21	0.16
7	XXX	XXX	XXX	53	130	158	91	172	200	8		0.21	0.16
8	XXX	XXX	XXX	53	148	180	91	188	220	8		0.21	0.16
8,5	XXX	XXX	XXX	61	157	191	103	203	237	10		0.24	0.19
9	XXX	XXX	XXX	61	167	203	103	213	249	10		0.24	0.19
10	XXX	XXX	XXX	61	185	225	103	229	269	10		0.24	0.19
10,5	XXX	XXX	XXX	71	194	236	118	245	287	12		0.27	0.21
11	XXX	XXX	XXX	71	203	247	118	254	298	12		0.27	0.21
12	XXX	XXX	XXX	71	222	270	118	271	319	12		0.27	0.21
13	XXX	XXX	XXX	77	240	292	124	291	343	14		0.29	0.24
14	XXX	XXX	XXX	77	259	315	124	308	364	14		0.29	0.24

Solid carbide | Standard | j6 | 2 | 138° | h5 DIN 6535 HA | 40 bar | HPC

GARANT Master Steel DEEP solid carbide deep hole drill

Excellent chip evacuation due to the unequal helical pitch of the flutes, guide rings and additional flute lands for very high precision when drilling. **Maximum process reliability** due to exactly matching tools within the overall system. Drilling up to the maximum depth without a pilot drill. **Significantly increased tool stability** due to the substantially strengthened core. **Increased metal removal rates** and **outstanding tool lives** lead to an economical high-end drilling process.

Recommendation: Maximum drilling depth:
flute length (see table) less 1.5×nominal ∅.

Note:	For process reliability when using the 16×D deep-hole drill, an initial centre drilling with No. 121068 – 121130 or at least 4×D pilot drilling operation with pilot drill No. 123885 is necessary. For deep holes greater than 20×D, a pilot hole to the maximum depth of the hole with a pilot drill No. 123885 is absolutely essential. The generation of a pilot hole improves process reliability. **The specified L/D ratio gives the minimum achievable depth of hole with the respective deep-hole drill.**

12 3893

12 3895

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	K						
12 3893				110	100	95	95	75						60	55		100	●		●	○		
12 3895				105	95	85	85	70						55	50		95	●		●	○		

GARANT Master Steel SPEED solid carbide deep-hole drill, plain shank

∅ j6	10E 12 3893	10E 12 3895						
	DIN 6535 HA 25×D	DIN 6535 HA 30×D			L_{tot}			< 900 N f
			12 3893	12 3895	12 3893	12 3895		
mm	TiAlN	TiAlN	mm	mm	mm	mm	mm	mm/rev.
3	XXX	XXX	88	104	131	147	6	0.07
3,3	XXX	XXX	97	114	140	157	6	0.09
3,5	XXX	XXX	97	114	140	157	6	0.09
4	XXX	XXX	113	134	155	176	6	0.09
5	XXX	XXX	138	163	180	205	6	0.11
6	XXX	XXX	165	195	205	235	6	0.14
7	XXX	XXX	193	228	235	270	8	0.16
8	XXX	XXX	220	260	260	300	8	0.16
8,5	XXX	XXX	234	276	280	322	10	0.19
9	XXX	XXX	248	293	294	339	10	0.19
10	XXX	XXX	275	325	319	369	10	0.19
11	XXX	XXX	302	357	353	408	12	0.21
12	XXX	XXX	330	390	379	439	12	0.21
13	XXX	XXX	357	422	408	473	14	0.24
14	XXX	XXX	385	455	434	504	14	0.24

Solid carbide | Standard | m7 | 3 | 145° | h6 DIN 6535 HA | 90° | 25 bar | HPC

MF | M

GARANT Master Steel FEED solid carbide stepped drill, for tapping holes with 90° counterbore

For generation of **optimum tapping holes.**
Creates **ideal machining conditions** for the subsequent tapping tool. The cutter ∅ of the drill is matched to the thread that is to be produced, in order to achieve a threads true to gauge and for **high process reliability of the tapping process.** The 90° counterbore for the thread is produced **in the same operation** as drilling the tapping hole.
3-flute drill, specially developed for **use at very high feed rates**. Outstandingly suitable for machines with high installed power and stable machining conditions.
Diameter tolerance first level: h7.

12 5035

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG	GGG	Uni				
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	M	M	S	K	K					
12 5035				160	140	130	110	90	60				60	50	40	130	80	●		●	●		

for threads	11E 12 5035							
	GARANT Master Steel FEED solid carbide stepped drill							< 1100 N
	TiAlN		h7			L_{tot}		f
	mm	mm	mm	mm	mm	mm	mm	mm/rev.
M5	XXX	4.25	5.5	13.6	28	66	6	0.28
M6	XXX	5.1	6.6	16.5	41	79	8	0.32
M8	XXX	6.85	8.8	21	47	89	10	0.37
M8×1	XXX	7.1	8.8	21	47	89	10	0.37
M10	XXX	8.6	11	25.5	55	102	12	0.44
M10×1	XXX	9.1	11	25.5	55	102	12	0.44
M12	XXX	10.35	13.2	30	60	107	14	0.5
M16	XXX	14.15	17.6	38.5	73	123	18	0.56

Solid carbide | Standard | m7 | 3 | 145° | h6 DIN 6535 HA | 90° | 25 bar | HPC

GARANT Master Steel FEED solid carbide stepped drill, non-standard sizes, with 90° counterbore

Stepped drill, finish ground to your specifications.
For producing a drilled hole and 90° counterbore is a single operation.
3-flute drill, specially developed for **use at very high feed rates**.
Outstandingly suitable for machines with high installed power and stable machining conditions.
Diameter tolerance first level: h7.

Note: Nominal ∅ and step length are configurable (freely selectable within the range stated in the table) and ground to specification.

12 5040 – 5044

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG	GGG	Uni				
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	M	M	S	K	K					
12 5040–12 5044				160	140	130	110	90	60				60	50	40	130	80	●		●	●		

for threads	11E 12 5040	11E 12 5041	11E 12 5042	11E 12 5043	11E 12 5044							
	GARANT Master Steel FEED solid carbide stepped drill, configurable											< 1100 N
	from a quantity of 3 pieces	from a quantity of 5 pieces	from a quantity of 10 pieces	from a quantity of 15 pieces	from a quantity of 20 pieces	h7	min-max		L_{tot}			f
mm	TiAlN	TiAlN	TiAlN	TiAlN	TiAlN	mm	mm	mm	mm	mm	mm	mm/rev.
3,98-4,5	(XXX)	(XXX)	(XXX)	(XXX)	(XXX)	5	4.5 – 15.4	28	66	6	0.28	
4,51-5,5	(XXX)	(XXX)	(XXX)	(XXX)	(XXX)	6	5.5 – 15.4	28	66	6	0.28	
5,51-6,5	(XXX)	(XXX)	(XXX)	(XXX)	(XXX)	7	6.5 – 22.55	41	79	8	0.32	
6,51-7,5	(XXX)	(XXX)	(XXX)	(XXX)	(XXX)	8	7.5 – 22.55	41	79	8	0.37	
7,51-8,5	(XXX)	(XXX)	(XXX)	(XXX)	(XXX)	9	8.5 – 25.85	47	89	10	0.37	
8,51-9,5	(XXX)	(XXX)	(XXX)	(XXX)	(XXX)	10	9.5 – 25.85	47	89	10	0.44	
9,51-11,5	(XXX)	(XXX)	(XXX)	(XXX)	(XXX)	12	11.5 – 30.25	55	102	12	0.44	
11,51-13,5	(XXX)	(XXX)	(XXX)	(XXX)	(XXX)	14	13.5 – 33	60	107	14	0.5	
13,51-15,5	(XXX)	(XXX)	(XXX)	(XXX)	(XXX)	16	15.5 – 33.75	65	115	16	0.56	
15,51-17,5	(XXX)	(XXX)	(XXX)	(XXX)	(XXX)	18	17.5 – 40.15	73	123	18	0.61	

Solid carbide	DIN 8378	Type N	h8	140°	h6 DIN 6535 HA	90°

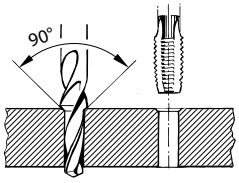
Garant

Solid carbide stub stepped drill for tapping holes, 90° countersink

Very sturdy – step length to DIN 8378. Tight concentricity tolerances between drill and counterbore ∅ guarantee exact alignment.

Application: **Particularly suitable for NC machines and automatic machines.** For drilling tapping holes to DIN 336 sheet 1 with 90° countersinking. In the following operation, the tap therefore does not have to cut into the sharp edge of the hole. Sizes **F: Tapping holes** for the following **fluteless taps.**

12 5050



Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	CuZn	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	M	M	S	K	N						
12 5050	260	180	180	90	90	90	60	35					35	30	25	110	180	●		●		○	

for threads	12 5050 Solid carbide stub stepped drill 90° TiAlN		h8			L_{tot}		< 1100 N f
		mm	mm	mm	mm	mm	mm	mm/rev.
M2F	XXX	1.8	2.5	5.3	20	62	6	0.05
M2,5F	XXX	2.3	3	6.8	20	62	6	0.05
M3	XXX	2.5	3.4	8.8	20	62	6	0.08
M3F	XXX	2.8	3.4	8.8	20	62	6	0.08
M3,5F	XXX	3.25	4	9.6	24	66	6	0.08
M4	XXX	3.3	4.5	11.4	24	66	6	0.08
M4F	XXX	3.7	4.5	11.4	24	66	6	0.08
M5	XXX	4.2	5.5	13.6	28	66	6	0.08
M5F	XXX	4.65	5.5	13.6	28	66	6	0.08
M6	XXX	5	6.6	16.5	34	79	8	0.11
M6F	XXX	5.55	6.6	16.5	34	79	8	0.11
M8	XXX	6.8	9	21	47	89	10	0.11
M8F	XXX	7.45	9	21	47	89	10	0.11
M10	XXX	8.5	11	25.5	55	102	12	0.14
M10F	XXX	9.35	11	25.5	55	102	12	0.14
M12	XXX	10.2	13.5	30	60	107	14	0.18
M12F	XXX	11.2	13.5	30	60	107	14	0.18
M14	XXX	12	16	34.5	65	115	16	0.18
M16	XXX	14	18	38.5	73	123	18	0.18
M16F	XXX	15.1	18	38.5	73	123	18	0.18

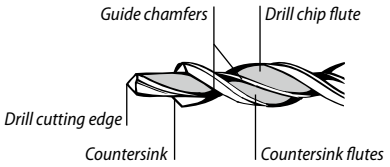
Solid carbide | Standard | Type N | h7 | 140° | h6 DIN 6535 HA | 90°

Solid carbide stepped drill for tapping holes, 90° countersink

Drill and counterbore each with its own chip flutes and guide chamfers. This special design permits frequent regrinding without losing the stepped drill profile. Countersink angle 90°.

Advantage: Precisely aligned **tapping drill hole and countersink** produced **in a single operation**. For tapping drill holes.

12 5100



Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	CuZn	Uni
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	M	M	S	K	N	
12 5100	260	180	180	90	90	90	60	35					35	30	25	110	180	●

for threads	11E 12 5100 Solid carbide stepped drill for tapping holes 90° TiAlN		h7				L_{tot}		< 1100 N f
		mm	mm	mm	mm	mm	mm	mm	mm/rev.
M3	XXX	2.5	6	8.8	28	66	6	0.08	
M4	XXX	3.3	6	11.4	28	66	6	0.08	
M5	XXX	4.2	6	13.6	28	66	6	0.08	
M6	XXX	5	8	16.5	41	79	8	0.11	
M8	XXX	6.8	10	21	47	89	10	0.11	
M10	XXX	8.5	12	25.5	55	102	12	0.14	
M12	XXX	10.2	14	30	60	107	14	0.18	

Solid carbide | DIN 8376 | Type N | h8 | 140° | 180°

Solid carbide stub stepped drill for through holes, 180° (for socket-head screws)

Very sturdy– step length to DIN 8376. **Tight concentricity tolerances** between drill and counterbore Ø guarantee exact alignment.

Application: For screw through holes to DIN-ISO 273 and counterbores to DIN 74, sheet 2 form H, J, and K, medium version. For screws to DIN 912, 6912, and 7984, ISO 1207 (DIN 84).

12 5120

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	CuZn	Uni
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	M	M	S	K	N	
12 5120	260	180	180	90	90	90	60	35					35	30	25	110	180	●

for screws	11E 12 5120 Solid carbide stub stepped drill 180° TiAlN		h8				L_{tot}		< 1100 N f
		mm	mm	mm	mm	mm	mm	mm	mm/rev.
M3	XXX	3.4	6	9	28	64	6	0.08	
M4	XXX	4.5	8	11	37	79	8	0.08	
M5	XXX	5.5	10	13	43	89	10	0.08	
M6	XXX	6.6	11	15	55	102	12	0.11	
M8	XXX	9	15	19	65	115	16	0.11	
M10	XXX	11	18	23	62	123	18	0.14	

Overview – boring

Type >	NC spotting drills	Indexable drills						
Brand >	Garant	Garant HiPer drill	HOLEX Flat drills	Garant MTC	Garant GARANT Power Drill	HOLEX HOLEX Pro Drill	KOMET KUB Quatron®	KOMET KUB Pentron®
Item number	**231500 – 231502**	**231600 – 231620**	**23 2240 – 23 2270**	**23 2298 – 23 2310**	**23 4000 – 23 4015**	**23 5000 – 23 5010**	**23 5500 – 23 5505**	**23 6601 – 23 6615**
Shank	HA / HB	HB (ISO 9766)	HB / MT	Combi	HB (ISO 9766)	HB (ISO 9766)	Combi / ABS	HB (ISO 9766) / ABS
Version/length	90° / 120° / 142°	1.5 / 3 / 5 / 8 / 10/ 12×D	1.5 / 3 / 5 / 8 /12×D	2 / 3 / 4×D	2 / 3 / 4 / 5×D	2 / 3 / 4×D	2 / 3 ×D	2 / 3 / 4 / 5×D
Size range	10 – 20	9 – 36	12 – 65	14 – 44	14 – 44	14 – 40	14 – 65	14 – 46
Page(s)	131	132 / 133	136	138	140	142	144 / 145	147 – 149
Suitable Insert								
Insert type / ISO	**SOGT**	**Interchangeable head**	**HSS-/HSS-E-PM insert**	**WOEX**	**SOGX**	**SOMT XOMT**	**SOEX**	**SOGX**
Item number	**231515 – 231526**	**231630 – 231690**	**23 2282 – 23 2286**	**23 2400 – 23 2780**	**23 4030 – 23 4098**	**23 5030 – 23 5082**	**23 6520 – 23 6576**	**23 6605 – 23 6610**
		●	●	○	●	●	●	●
		○	○	●	●	●	●	●
		●●	●●		●	●	●	●
				●	○	○	●	○

Type >	Indexable drills				Core drills		
Brand >	KOMET KUB Trigon®	KOMET KUB Centron®	KOMET KUB Centron® Powerline	KOMET KUB® V464	Garant Fixed size boring bar	Garant Twin-cutter drilling head	KOMET TwinKom® G01
Item number	**23 6630 – 23 6635**	**23 6650 – 23 6654**	**23 6651 – 23 6654**	**23 6660 – 23 6672**	**23 6677**	**23 7609 – 23 7610**	**23 6680 – 23 6688**
Shank	Combi / ABS	ABS	ABS	ABS	cylindrical	ER / HW	ABS
Version/length	3×D	4 / 6 / 8×D	4 / 6 / 8×D	MODULAR			
Size range	14 – 44	20 – 81	20 – 39.2	80 – 160	9.8 – 31.8	23.5 – 153	24 – 215
Page(s)	151	152 / 153	153	154	155	159	156
Suitable Insert							
Insert type / ISO	**WOEX**	**WOEX**	**SOEX**	**WOEX**	**CC..**	**CC..**	**SO.. / WO.. /CC..**
Item number	**23 6740 – 23 7080**	**23 6740 – 23 7080**	**23 6520 – 23 6576**	**23 6740 – 23 7080**	**Catalogue part 26**	**Catalogue part 26**	**Catalogue part 23 / 26**
	●	○	○	○	●	●●	●●
	●	○	○	○	●●	●●	●●
						○	●●
	●			○	○	●	●

Type >	Fine boring		Arbors	Precision boring tools		Arbors
Brand >	Garant Micro-system	Garant Precision boring system	Garant Reducers, Extensions	KOMET B301 / M302 M03 speed	KOMET MikroKom® hi.flex / BluFlex 2	KOMET Reducers, Extensions
Item number	**23 7490 – 23 7498**	**23 7501 – 23 7573**	**23 7626 – 23 7672**	**23 8301 – 23 8374**	**23 8390 – 23 8395**	**23 9000 – 23 9102**
Shank	cylindrical	ER / HW / Mono	SK / HSK / BT	ABS	ABS	SK / HSK / ABS
Size range	0.3 – 19.1	9.75 – 320		24.8 – 206	6 – 365	
Page(s)	160	161 – 165	166	167 / 168	169	170 / 171
Suitable Insert						
Insert type / ISO	**Cutter insert**	**CC..**		**TO.X**	**TOGX/WOHX**	
Item number	**23 7621 – 23 7625**	**23 7695 – 23 7698 Catalogue part 26**		**Catalogue part 24**	**Catalogue part 24**	

●● = particularly suitable; ● = suitable; ○ = suitable only under restricted conditions

Garant KOMET HOLEX Tool materials – modular drilling / modular reaming

Garant

	Grade description	P (steel)					M (Inox)				K GG(G)				N (Alu)		S (Ti)		H (HRC)		
		P01	P10	P20	P30	P40	M10	M20	M30	M40	K01	K10	K20	K30	(Alu)	(Alu)	(Ti)	(Ti)	< 55	< 60	< 67
Carbide coated	Grade with very high wear resistance, for steel and very high wear resistance. CVD-TiCN- / Al_2O_3-TiN multi-layer coating.		HB6530																		
	Highly wear-resistant micrograin grade for high vc values. PVD-TiAlN / TiN coating.		HB6535				HB6535														
	Micrograin grade with extremely good edge stability, for use on stainless materials. PVD-TiAlN coating.						HB6640														
	For machining cast iron. CVD-TiC- / Al_2O_3 coating										HB6715										
	Universally applicable wear-resistant and tough grade.	HB630					HB630				HB630										
	For machining non-ferrous metals. PVD-TiB2 coating.														HB6810						
	Machining of cast iron. CVD-TiCN- / Al_2O_3 coating.										HB7305										
	Micro-grain carbide with 10% cobalt. AlTiSiN-PVD coating.			HB7530									HB7530								
	Highly wear-resistant micrograin grade for high vc values with CVD-TiCN- / Al_2O_3-TiN multi-layer coating.		HB7630																		
	Tough grade with 15% cobalt for machining steel. Particularly suitable for machining under unstable conditions. TiAlN coating.			DBC									DBC								
	Micro-grain carbide with 10% cobalt. PVD multi-layer coating. Also suitable for aluminium.								HB7630												
	Tough wear-resistant grade, general-purpose use. PVD-TiCN- / TiN coating.		HB7635				HB7635														
	Grade for heavily interrupted cutting with PVD-TiAlN coating.			HB7640					HB7640									HB7640			
	Tool material grade for machining cast iron. Special TiAlSiXN coating.											HB7725									
	With high wear-resistance, especially for stainless steels. PVD-TiAlN coating.		HB7830					HB7830													
Carbide, uncoated	Machining of non-ferrous metals (aluminium).														HU7310						
	Polished uncoated carbide substrate for machining non-ferrous metals.														HU7810						

KOMET

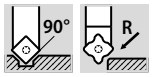
	CVD-TiC-TiCN-TiN: Multi-layered coating on a P25M base substrate.		BK60				BK60														
	TiN-Ti (C,N) -Al2O3-TiN: for W30 inserts. **MT-TiCN -Al2O3-TiN:** for W29 inserts.			BK6425																	
	TiN-Ti (C,N) -Al2O3-TiN: for W30 inserts. **MT-TiCN -Al2O3-TiN:** for W29 inserts.				BK6440																
	CVC-TiCN-TiC-Al2O3-TiN: Long tool life even in the upper part of the cutting speed range.		BK72																		
	PVD-TiAlN / TiN / PVD-TiCN / TiN: General-purpose grade for enhanced wear resistance.		BK8425				BK8425						BK8425								
	PVD-TiAlN / TiN / PVD-TiCN / TiN: Suitable for machining tool steels and also stainless steels. Very tough wear-resistant grade.			BK8430				BK8430													
	CVD-TiN-TiCN-Al_2O_3: For higher cutting speeds in cast iron materials.										BK62										
	PVD-TiAlN: For heavily interrupted cutting.			BK7935					BK7935									BK7935			
	CVD-TiCN-TiN-Al2O3: Suitable for high cutting speeds.		BK6115									BK6115									
	PVD-TiB2: For aluminium materials < 10% Si content.														BK7710						
	Combination of carbide and a high performance DBC coating.														DBC						
	TiN-coated general-purpose grade for the best surface quality.		TIN					TIN													
	Combination of carbide and a high performance DBC-P coating.											DBF									
CERMET	Cermet high performance cutting material for high cutting speeds. Suitable for spheroidal graphite iron.		DST									DST									

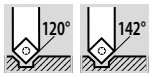
HOLEX

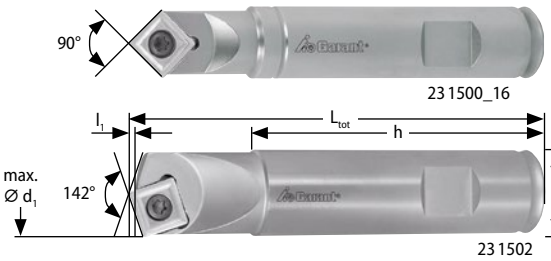
Carbide coated	**PVD-TiAlN** general-purpose tool material type			HBD30				HBD30				HBD30						HBD30			

Garant NC spotting drill for indexable inserts No. 231515 – 231526

23 1500 Size 10 – **With plain shank.**
Size 16; 20 – **With Weldon shank.**







Ø D_s	21Y 23 1500	21Y 23 1501	21Y 23 1502	Number of cutting edges Z	maximum hole Ø d_1		maximum drilling depth l_1		Shank length h	L_{tot}	Indexable insert size	Insert screw
	NC spotting drills				23 1500 23 1501	23 1502	23 1500 23 1501	23 1502				
mm	90°	120°	142°		mm	mm	mm	mm	mm	mm		
10	XXX	–	–	1	10	–	4	–	–	90	10; 10G	231540_TX8 (2,0 Nm)
16	XXX	–	–	1	15	–	7	–	–	70	100	16	231540_TX15 (2.5 Nm)
20	–	XXX	XXX	1	17	18.5	5	3	70	100	16	231540_TX15 (2.5 Nm)

Garant Indexable inserts for NC spotting drills No. 231500 - 231502

Application:

Size 16 – For NC spot drilling and chamfering. Also suitable for stationary use for face turning on the lathe. **Suitable for engraving.**
23 1520 Size 10 – For NC spot drilling and chamfering. Also suitable for stationary use for face turning on the lathe. **Not suitable for engraving.**
Size 10G – **Use only for engraving.**

Note: a_p = 4 mm, f = 0.03 mm.

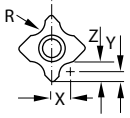
Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	CuZn
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	K	N
23 1515	250	250	250													65	110	250
23 1520				150	140	130	130	120						90	80			

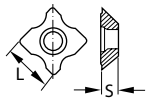
Type			10	10G	16
21Y 23 1515	Indexable insert for NC spotting drill	HB7735	–	–	XXX
21Y 23 1520		HB7525	XXX	XXX	XXX
			10	2	10
ISO code (23 1515)			–	–	SOGT 11T303
ISO code (23 1520)			SOGT 080208	SOGT 080201	SOGT 11T308

Garant Radiussed indexable inserts for NC spotting drills No. 231500

2-cutter radiussed indexable inserts.
Suitable for: No. 231500 size 16
Application: For convex radii on external Ø or in holes.

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	CuZn
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	K	N
23 1525/1526	250	250	250	200	150	150	150	150						90	80	65	110	250





Type / Radius R			16/1	16/1,5	16/2	16/2,5	16/3	
21Y 23 1525	Radiused indexable insert	HB7525	XXX	XXX	XXX	XXX	XXX	10
X		mm	2.75	3.25	3.75	4.25	4.75	
Y		mm	1.5	1.5	1.5	1.5	1.4	
Z		mm	2.5	3	3.5	4	4.4	

Type / Radius R			16/1-3
21Y 23 1526	Radiused indexable insert set	HB7525	XXX
Content: 1× each radiussed indexable insert No. 231525			Size 16/1; 16/1.5; 16/2; 16/2.5; 16/3

23 1526

ISO 9766

1.5×D 3×D 5×D

Garant

HiPer drill high-performance drill, right-hand cutting

- Very high feed rates and maximum performance due to optimally matched geometries and materials.
- Precise positioning of the cutter insert due to Vee insert seating and secure clamping by the centre bore.
- High concentricity when assembled.
- Shank support for optimum stability in operation.

23 1605 / 1610 Size 9–12,5 – Created by an additive procedure.

Note: The insert screw must be replaced after every fifth change of cutter insert.
Further sizes up to ∅ 50.99 mm available on request.

23 1605

∅ D	21S 23 1600	21S 23 1605	21S 23 1610	∅ range D	L_N			∅ D_s	L_s	Clamping screw
	HiPer-Drill base body				23 1600	23 1605	23 1610			
mm	1.5×D	3×D	5×D	mm	mm	mm	mm	mm	mm	
9	–	XXX	XXX	9 – 9.49	–	29	48	12	45	231999_5IP1 (0.2 Nm)
9,5	–	XXX	XXX	9.5 – 9.99	–	30	50	12	45	231999_5IP1 (0.2 Nm)
10	–	XXX	XXX	10 – 10.49	–	32	53	16	48	231999_5IP1 (0.2 Nm)
10,5	–	XXX	XXX	10.5 – 10.99	–	33	55	16	48	231999_5IP1 (0.2 Nm)
11	–	XXX	XXX	11 – 11.49	–	35	58	16	48	231999_6IP (0.4 Nm)
11,5	–	XXX	XXX	11.5 – 11.99	–	36	60	16	48	231999_6IP (0.4 Nm)
12	–	XXX	XXX	12 – 12.49	–	38	63	16	48	231999_6IP (0.4 Nm)
12,5	–	XXX	XXX	12.5 – 12.99	–	39	65	16	48	231999_6IP (0.4 Nm)
13	XXX	XXX	XXX	13 – 13.49	21	41	68	16	48	231999_7IP (0.6 Nm)
13,5	XXX	XXX	XXX	13.5 – 13.99	21	42	70	16	48	231999_7IP (0.6 Nm)
14	XXX	XXX	XXX	14 – 14.49	22	44	73	16	48	231999_8IP (0.9 Nm)
14,5		XXX	XXX	14.5 – 14.99	23	45	75	16	48	231999_8IP (0.9 Nm)
15	XXX	XXX	XXX	15 – 15.99	24	48	80	20	50	231999_8IP (0.9 Nm)
16	XXX	XXX	XXX	16 – 16.99	26	51	85	20	50	231999_8IP1 (1.2 Nm)
17	XXX	XXX	XXX	17 – 17.99	27	54	90	20	50	231999_8IP1 (1.2 Nm)
18	XXX	XXX	XXX	18 – 18.99	29	57	95	25	56	231999_8IP1 (1.2 Nm)
19	XXX	XXX	XXX	19 – 19.99	30	60	100	25	56	231999_9IP (2.2 Nm)
20	XXX	XXX	XXX	20 – 20.99	32	63	105	25	56	231999_9IP (2.2 Nm)
21	XXX	XXX	XXX	21 – 21.99	33	66	110	25	56	231999_9IP (2.2 Nm)
22	XXX	XXX	XXX	22 – 22.99	35	69	115	25	56	231999_10IP (3.3 Nm)
23	XXX	XXX	XXX	23 – 23.99	36	72	120	25	56	231999_10IP (3.3 Nm)
24	XXX	XXX	XXX	24 – 24.99	38	75	125	32	60	231999_10IP (3.3 Nm)
25	XXX	XXX	XXX	25 – 25.99	39	78	130	32	60	231999_15IP (5.0 Nm)
26	XXX	XXX	XXX	26 – 26.99	41	81	135	32	60	231999_15IP (5.0 Nm)
27	XXX	XXX	XXX	27 – 27.99	42	84	140	32	60	231999_15IP (5.0 Nm)
28	XXX	XXX	XXX	28 – 28.99	44	87	145	32	60	231999_15IP1 (5.7 Nm)
29	XXX	XXX	XXX	29 – 29.99	45	90	150	32	60	231999_15IP1 (5.7 Nm)
30	XXX	XXX	XXX	30 – 30.99	47	93	155	32	60	231999_15IP1 (5.7 Nm)
31	XXX	XXX	XXX	31 – 31.99	48	96	160	32	60	231999_20IP (7.5 Nm)
32	XXX	XXX	XXX	32 – 32.99	50	99	165	32	60	231999_20IP (7.5 Nm)
33	XXX	XXX	XXX	33 – 33.99	51	102	170	32	60	231999_20IP (7.5 Nm)
34	XXX	XXX	XXX	34 – 34.99	53	105	175	32	60	231999_20IP1 (7.5 Nm)
35	XXX	XXX	XXX	35 – 35.99	54	106	180	32	60	231999_20IP1 (7.5 Nm)
36	XXX	XXX	XXX	36 – 36.99	56	111	185	32	60	231999_20IP1 (7.5 Nm)

ISO 9766

8×D 10×D 12×D

Garant HiPer drill high-performance drill, right-hand cutting

- Very high feed rates and maximum performance due to optimally matched geometries and materials.
- Precise positioning of the cutter insert due to Vee insert seating and secure clamping by the centre bore.
- High concentricity when assembled.
- Shank support for optimum stability in operation.

23 1615 Size 9–12,5 – Created by an additive procedure.
23 1617/1620 – Polished flutes.

23 1620

Note:
Further sizes up to ∅ 50.99 mm available on request.
The insert screw must be replaced after every fifth change of cutter insert.
23 1615 – reduce v_f values by 20%.
23 1617 – Reduce feed rates f by 10% and v_c values by 30%.
23 1620 – Reduce feed rates f by 10% and v_c values by 40%.
23 1617/1620 – For process reliability when using the drill, initial pilot drilling to 1.5xD with the drill No. 231600 with the same cutter insert size and type is necessary.
The generation of a pilot hole improves process reliability.

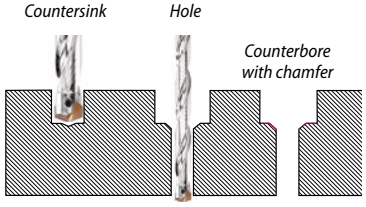
∅ D	215 23 1615	215 23 1617	215 23 1620	∅ range D	L_N			∅ D_s	L_s	Clamping screw
	HiPer-Drill base body				23 1615	23 1617	23 1620			
mm	8×D	10×D	12×D	mm	mm	mm	mm	mm	mm	
9	XXX	–	–	9 – 9.49	76	–	–	12	45	231999_5IP1 (0.2 Nm)
9,5	XXX	–	–	9.5 – 9.99	80	–	–	12	45	231999_5IP1 (0.2 Nm)
10	XXX	–	–	10 – 10.49	84	–	–	16	48	231999_5IP1 (0.2 Nm)
10,5	XXX	–	–	10.5 – 10.99	88	–	–	16	48	231999_5IP1 (0.2 Nm)
11	XXX	–	–	11 – 11.49	92	–	–	16	48	231999_6IP (0.4 Nm)
11,5	XXX	–	–	11.5 – 11.99	96	–	–	16	48	231999_6IP (0.4 Nm)
12	XXX	–	–	12 – 12.49	100	–	–	16	48	231999_6IP (0.4 Nm)
12,5	XXX	–	–	12.5 – 12.99	104	–	–	16	48	231999_6IP (0.4 Nm)
13	XXX	XXX	XXX	13 – 13.49	108	135	162	16	48	231999_7IP (0.6 Nm)
13,5	XXX	XXX	XXX	13.5 – 13.99	112	140	168	16	48	231999_7IP (0.6 Nm)
14	XXX	XXX	XXX	14 – 14.49	116	145	174	16	48	231999_8IP (0.9 Nm)
14,5	XXX	XXX	XXX	14.5 – 14.99	120	150	180	16	48	231999_8IP (0.9 Nm)
15	XXX	XXX	XXX	15 – 15.99	128	160	192	20	50	231999_8IP (0.9 Nm)
16	XXX	XXX	XXX	16 – 16.99	136	170	204	20	50	231999_8IP1 (1.2 Nm)
17	XXX	XXX	XXX	17 – 17.99	144	180	216	20	50	231999_8IP1 (1.2 Nm)
18	XXX	XXX	XXX	18 – 18.99	152	190	228	25	56	231999_8IP1 (1.2 Nm)
19	XXX	XXX	XXX	19 – 19.99	160	200	240	25	56	231999_9IP (2.2 Nm)
20	XXX	XXX	XXX	20 – 20.99	168	210	252	25	56	231999_9IP (2.2 Nm)
21	XXX	XXX	XXX	21 – 21.99	176	220	264	25	56	231999_9IP (2.2 Nm)
22	XXX	XXX	XXX	22 – 22.99	184	230	276	25	56	231999_10IP (3.3 Nm)
23	XXX	XXX	XXX	23 – 23.99	192	240	288	25	56	231999_10IP (3.3 Nm)
24	XXX	XXX	XXX	24 – 24.99	200	250	300	32	60	231999_10IP (3.3 Nm)
25	XXX	XXX	XXX	25 – 25.99	208	260	312	32	60	231999_15IP (5.0 Nm)
26	XXX	XXX	XXX	26 – 26.99	216	270	324	32	60	231999_15IP (5.0 Nm)
27	XXX	XXX	XXX	27 – 27.99	224	280	336	32	60	231999_15IP (5.0 Nm)
28	XXX	XXX	XXX	28 – 28.99	232	290	348	32	60	231999_15IP1 (5.7 Nm)
29	XXX	XXX	XXX	29 – 29.99	240	300	360	32	60	231999_15IP1 (5.7 Nm)
30	XXX	XXX	XXX	30 – 30.99	248	310	372	32	60	231999_15IP1 (5.7 Nm)
31	XXX	XXX	XXX	31 – 31.99	256	320	384	32	60	231999_20IP (7.5 Nm)
32	XXX	XXX	XXX	32 – 32.99	264	330	396	32	60	231999_20IP (7.5 Nm)
33	XXX	XXX	XXX	33 – 33.99	272	340	408	32	60	231999_20IP (7.5 Nm)
34	XXX	XXX	XXX	34 – 34.99	280	350	420	32	60	231999_20IP1 (7.5 Nm)
35	XXX	XXX	XXX	35 – 35.99	288	360	432	32	60	231999_20IP1 (7.5 Nm)
36	XXX	XXX	XXX	36 – 36.99	296	370	444	32	60	231999_20IP1 (7.5 Nm)

Garant Cutter inserts for HiPer drill high-performance drill, Form E 180°

Vee ground cutter inserts for precise positioning and stable seating.
Form E 180° cutter with 142° centre point and 0.5 mm protective chamfer

Application: For through holes for screws to DIN-ISO 273 and countersinking to DIN 74, sheet 2 form H, J and K, medium version.
For screws to DIN 912, 6912 and 7984, ISO 1207 (DIN 84).

Note:
Further sizes available on request.
Cutting data apply for drilling bodies 5×D.



Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	TOOLOX® 33 HRC	TOOLOX® 44 HRC	HARDOX® 500 < 1600 N	INOX < 900 N	GG(G)					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	H	H	H	M	K					
23 1690				130	110	100	90	75						40	35	30		80		●			

Counterbore ∅		mm	10	11	15	18	20	24	26	30	33
21M 23 1690	HiPer-Drill cutter insert **Form E**	HB7530	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
for DIN cylinder head screws			M5	M6	M8	M10	M12	M14	M16	M18	M20
suitable for through hole ∅		mm	5.5	6.6	9	11	13.5	15	17	19	21

Carbide

apart from 23 1645 — 135° — only 23 1645

Garant

Cutter inserts for HiPer drill high-performance drill, right-hand cutting

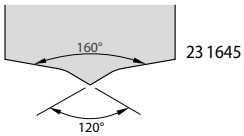
Vee ground cutter inserts for precise positioning and stable seating.
Concentricity when assembled ≤ 20 µm. For holes up to IT9 accuracy.

23 1645 – **Special pyramidal point geometry** for optimum spot drilling, even under unstable conditions and at long tool overhangs up to 12×D, as for instance occurs when machining sheet metal and steel girders. Also suitable for stack drilling.

Note: Further sizes available on request. Cutting data apply to 5×D drilling bodies.
Use exclusively cutter heads of the same type when drilling pilot holes.

23 1645 – 1×D maximum drilling depth without through-coolant.

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	TOOLOX® 33 HRC	TOOLOX® 44 HRC	HARDOX® 500 < 1600 N	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	CuZn					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	K	N					
23 1630	250	200	150															180		●			
23 1640				130	110	100	90	75			40	35	30				80			●			
23 1645				140	120	100											80			●	○	○	
23 1650	200	200	150											65	55	30				●			
23 1660						100	90	70									100			●			



23 1645

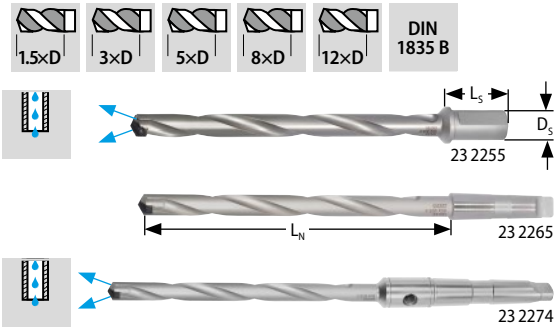
∅ D	21M 23 1630	21M 23 1640	21M 23 1645	21M 23 1650	21M 23 1660	for base body ∅ D	Alu	< 750 N	< 900 N	INOX > 900 N	GG(G)
	HiPer drill cutter insert						f	f	f	f	f
	n7	m7	m7	h7	m7		23 1630	23 1645	23 1640	23 1650	23 1660
mm	HU7810	HB7530	HB3040	HB7630	HB7725	mm	mm/rev.	mm/rev.	mm/rev.	mm/rev.	mm/rev.
9	XXX	XXX	–	XXX	XXX	9	0.23	–	0.17	0.11	0.21
9,2	XXX	XXX	–	XXX	–	9	0.23	–	0.17	0.11	–
9,5	XXX	XXX	–	XXX	XXX	9.5	0.23	–	0.17	0.11	0.21
9,7	XXX	XXX	–	XXX	–	9.5	0.23	–	0.17	0.11	–
9,9	XXX	XXX	–	XXX	–	9.5	0.23	–	0.17	0.11	–
10	XXX	XXX	–	XXX	XXX	10	0.25	–	0.18	0.12	0.23
10,2	XXX	XXX	–	XXX	XXX	10	0.25	–	0.18	0.12	0.23
10,5	XXX	XXX	–	XXX	XXX	10.5	0.25	–	0.18	0.12	0.23
10,7	XXX	XXX	–	XXX	–	10.5	0.25	–	0.18	0.12	–
11	XXX	XXX	–	XXX	XXX	11	0.26	–	0.19	0.13	0.23
11,1	XXX	XXX	–	XXX	–	11	0.26	–	0.19	0.13	–
11,5	XXX	XXX	–	XXX	XXX	11.5	0.26	–	0.19	0.13	0.23
11,7	–	XXX	–	XXX	–	11.5	–	–	0.19	0.13	–
12	XXX	XXX	–	XXX	XXX	12	0.27	–	0.2	0.14	0.24
12,5	XXX	XXX	–	XXX	XXX	12.5	0.27	–	0.2	0.14	0.24
12,7	XXX	XXX	–	XXX	–	12.5	0.27	–	0.2	0.14	–
12,8	XXX	XXX	–	XXX	–	12.5	0.27	–	0.2	0.14	–
12,9	XXX	XXX	–	XXX	–	12.5	0.27	–	0.2	0.14	–
13	XXX	XXX	–	XXX	XXX	13	0.29	–	0.2	0.14	0.26
13,1	–	XXX	–	XXX	–	13	–	–	0.2	0.14	–
13,2	–	XXX	–	XXX	–	13	–	–	0.2	0.14	–
13,3	–	XXX	–	XXX	–	13	–	–	0.2	0.14	–
13,4	–	XXX	–	XXX	–	13	–	–	0.2	0.14	–
13,5	XXX	XXX	–	XXX	XXX	13.5	0.29	–	0.21	0.15	0.26
13,6	–	XXX	–	XXX	–	13.5	–	–	0.21	0.15	–
13,7	XXX	XXX	–	XXX	–	13.5	0.29	–	0.21	0.15	–
13,8	–	XXX	–	XXX	–	13.5	–	–	0.21	0.15	–
13,9	–	XXX	–	XXX	–	13.5	–	–	0.21	0.15	–
14	XXX	XXX	XXX	XXX	XXX	14	0.31	0.26	0.22	0.15	0.28
14,1	–	XXX	XXX	XXX	–	14	–	0.26	0.22	0.15	–
14,2	–	XXX	XXX	XXX	–	14	–	0.26	0.22	0.15	–
14,3	–	XXX	–	XXX	–	14	–	–	0.22	0.15	–
14,4	–	XXX	–	XXX	–	14	–	–	0.22	0.15	–
14,5	XXX	XXX	XXX	XXX	XXX	14.5	0.31	0.26	0.23	0.16	0.28
14,6	–	XXX	–	XXX	–	14.5	–	–	0.23	0.16	–
14,7	XXX	XXX	–	XXX	–	14.5	0.31	–	0.23	0.16	–
14,75	XXX	XXX	–	XXX	–	14.5	0.31	–	0.23	0.16	–
14,8	–	XXX	–	XXX	–	14.5	–	–	0.23	0.16	–
14,9	–	XXX	–	XXX	–	14.5	–	–	0.23	0.16	–
15	XXX	XXX	XXX	XXX	XXX	15	0.34	0.26	0.23	0.16	0.31
15,1	XXX	XXX	XXX	XXX	–	15	0.34	0.26	0.23	0.16	–
15,2	–	XXX	XXX	XXX	–	15	–	0.26	0.23	0.16	–
15,25	–	XXX	–	XXX	–	15	–	–	0.23	0.16	–
15,3	–	XXX	–	XXX	–	15	–	–	0.23	0.16	–
15,4	–	XXX	–	XXX	–	15	–	–	0.23	0.16	–
15,5	XXX	XXX	XXX	XXX	XXX	15	0.34	0.26	0.24	0.17	0.31
15,6	–	XXX	–	XXX	–	15	–	–	0.24	0.17	–
15,7	XXX	XXX	–	XXX	–	15	0.34	–	0.24	0.17	–
15,8	–	XXX	XXX	XXX	–	15	–	0.26	0.24	0.17	–
15,9	–	XXX	–	XXX	–	15	–	–	0.24	0.17	–
16	XXX	XXX	XXX	XXX	XXX	16	0.37	0.26	0.25	0.17	0.33
16,1	–	XXX	XXX	XXX	–	16	–	0.26	0.25	0.17	–

Ø D	21M 23 1630	21M 23 1640	21M 23 1645	21M 23 1650	21M 23 1660	for base body Ø D	Alu	< 750 N	< 900 N	INOX > 900 N	GG(G)
	HiPer drill cutter insert						f	f	f	f	f
	n7	m7	m7	h7	m7		23 1630	23 1645	23 1640	23 1650	23 1660
mm	HU7810	HB7530	HB3040	HB7630	HB7725	mm	mm/rev.	mm/rev.	mm/rev.	mm/rev.	mm/rev.
16,2	–	XXX	XXX	XXX	–	16	–	0.26	0.25	0.17	–
16,25	XXX	XXX	–	XXX	–	16	0.37	–	0.25	0.18	–
16,3	–	XXX	–	XXX	–	16	–	–	0.25	0.18	–
16,4	–	XXX	–	XXX	–	16	–	–	0.25	0.18	–
16,5	XXX	XXX	XXX	XXX	XXX	16	0.37	0.26	0.26	0.18	0.33
16,6	–	XXX	–	XXX	–	16	–	–	0.26	0.18	–
16,7	XXX	XXX	–	XXX	–	16	0.37	–	0.26	0.18	–
16,75	XXX	XXX	–	XXX	–	16	0.37	–	0.26	0.18	–
16,8	–	XXX	–	XXX	–	16	–	–	0.26	0.18	–
16,9	–	XXX	–	XXX	–	16	–	–	0.26	0.18	–
17	XXX	XXX	XXX	XXX	XXX	17	0.38	0.26	0.27	0.19	0.34
17,1	–	XXX	–	XXX	–	17	–	–	0.27	0.19	–
17,2	–	XXX	–	XXX	–	17	–	–	0.27	0.19	–
17,3	–	XXX	–	XXX	–	17	–	–	0.27	0.19	–
17,4	–	XXX	–	XXX	–	17	–	–	0.27	0.19	–
17,5	XXX	XXX	XXX	XXX	XXX	17	0.38	0.26	0.27	0.19	0.34
17,6	–	XXX	–	XXX	–	17	–	–	0.27	0.19	–
17,7	XXX	XXX	–	XXX	–	17	0.38	–	0.28	0.19	–
17,8	–	XXX	XXX	XXX	–	17	–	0.26	0.28	0.19	–
17,9	–	XXX	–	XXX	–	17	–	–	0.28	0.19	–
18	XXX	XXX	XXX	XXX	XXX	18	0.4	0.3	0.28	0.2	0.36
18,1	–	XXX	–	XXX	–	18	–	–	0.28	0.2	–
18,2	–	XXX	–	XXX	–	18	–	–	0.28	0.2	–
18,25	XXX	XXX	–	XXX	–	18	0.4	–	0.28	0.2	–
18,3	XXX	XXX	–	XXX	–	18	0.4	–	0.28	0.2	–
18,4	–	XXX	–	XXX	–	18	–	–	0.28	0.2	–
18,5	XXX	XXX	XXX	XXX	XXX	18	0.4	0.3	0.29	0.2	0.36
18,6	–	XXX	–	XXX	–	18	–	–	0.29	0.2	–
18,7	XXX	XXX	–	XXX	–	18	0.4	–	0.29	0.2	–
18,8	–	XXX	–	XXX	–	18	–	–	0.29	0.2	–
18,9	–	XXX	–	XXX	–	18	–	–	0.29	0.2	–
19	XXX	XXX	XXX	XXX	XXX	19	0.4	0.3	0.3	0.21	0.36
19,1	–	XXX	–	XXX	–	19	–	–	0.3	0.21	–
19,2	–	XXX	–	XXX	–	19	–	–	0.3	0.21	–
19,25	XXX	XXX	–	XXX	–	19	0.41	–	0.3	0.21	–
19,3	–	XXX	–	XXX	–	19	–	–	0.3	0.21	–
19,4	–	XXX	–	XXX	–	19	–	–	0.3	0.21	–
19,5	XXX	XXX	XXX	XXX	XXX	19	0.41	0.3	0.3	0.21	0.37
19,6	–	XXX	–	XXX	–	19	–	–	0.3	0.21	–
19,7	XXX	XXX	–	XXX	–	19	0.41	–	0.3	0.21	–
19,75	XXX	XXX	–	XXX	–	19	0.41	–	0.3	0.21	–
19,8	–	XXX	XXX	XXX	–	19	–	0.3	0.3	0.21	–
19,9	–	XXX	–	XXX	–	19	–	–	0.3	0.21	–
20	XXX	XXX	XXX	XXX	XXX	20	0.42	0.3	0.31	0.22	0.38
20,4	XXX	XXX	–	XXX	–	20	0.42	–	0.31	0.22	–
20,5	XXX	XXX	XXX	XXX	XXX	20	0.42	0.3	0.32	0.22	0.38
20,7	XXX	XXX	–	XXX	–	20	0.42	–	0.32	0.22	–
20,75	XXX	XXX	–	XXX	–	20	0.42	–	0.32	0.22	–
21	XXX	XXX	XXX	XXX	XXX	21	0.42	0.3	0.32	0.23	0.38
21,5	XXX	XXX	XXX	XXX	XXX	21	0.42	0.3	0.33	0.23	0.38
21,7	XXX	XXX	–	XXX	–	21	0.42	–	0.33	0.23	–
22	XXX	XXX	XXX	XXX	XXX	22	0.43	0.33	0.33	0.23	0.39
22,25	XXX	XXX	–	XXX	–	22	0.43	–	0.34	0.24	–
22,5	XXX	XXX	XXX	XXX	XXX	22	0.43	0.33	0.34	0.24	0.39
22,7	XXX	XXX	–	XXX	–	22	0.43	–	0.34	0.24	–
22,75	XXX	XXX	–	XXX	–	22	0.43	–	0.34	0.24	–
23	XXX	XXX	XXX	XXX	XXX	23	0.44	0.33	0.35	0.24	0.4
23,25	XXX	XXX	–	XXX	–	23	0.44	–	0.35	0.24	–
23,5	XXX	XXX	–	XXX	XXX	23	0.44	–	0.35	0.25	0.4
23,7	XXX	XXX	–	XXX	–	23	0.44	–	0.36	0.25	–
23,75	–	XXX	–	XXX	–	23	–	–	0.36	0.25	–
24	XXX	XXX	XXX	XXX	XXX	24	0.45	0.33	0.36	0.25	0.41
24,5	XXX	XXX	XXX	XXX	XXX	24	0.45	0.33	0.37	0.26	0.41
24,7	XXX	XXX	–	XXX	–	24	0.45	–	0.37	0.26	–
24,75	XXX	XXX	–	XXX	–	24	0.45	–	0.37	0.26	–
25	XXX	XXX	XXX	XXX	XXX	25	0.46	0.33	0.38	0.26	0.41
25,4	XXX	XXX	–	XXX	–	25	0.46	–	0.38	0.27	–
25,5	XXX	XXX	XXX	XXX	XXX	25	0.46	0.33	0.38	0.27	0.41
25,7	XXX	XXX	–	XXX	–	25	0.46	–	0.38	0.27	–
26	XXX	XXX	XXX	XXX	XXX	26	0.47	0.33	0.38	0.27	0.42
26,5	XXX	XXX	XXX	XXX	XXX	26	0.47	0.33	0.39	0.27	0.42
27	XXX	XXX	XXX	XXX	XXX	27	0.47	0.35	0.4	0.28	0.42
27,5	XXX	XXX	–	XXX	XXX	27	0.47	–	0.4	0.28	0.42
27,75	–	XXX	–	XXX	–	27	–	–	0.4	0.28	–
28	XXX	XXX	XXX	XXX	XXX	28	0.48	0.35	0.41	0.29	0.43
28,25	–	XXX	–	XXX	–	28	–	–	0.41	0.29	–
28,5	XXX	XXX	–	XXX	XXX	28	0.48	–	0.42	0.29	0.43
29	XXX	XXX	XXX	XXX	XXX	29	0.49	0.35	0.42	0.3	0.44
29,5	XXX	XXX	–	XXX	XXX	29	0.49	–	0.43	0.3	0.44
30	XXX	XXX	XXX	XXX	XXX	30	0.5	0.35	0.44	0.31	0.45
30,25	XXX	XXX	–	XXX	–	30	0.5	–	0.44	0.31	–
30,5	XXX	XXX	–	XXX	XXX	30	0.5	–	0.44	0.31	0.45
30,75	XXX	XXX	–	XXX	–	30	0.5	–	0.44	0.31	–
31	XXX	XXX	XXX	XXX	XXX	31	0.51	0.35	0.45	0.31	0.46
31,5	XXX	XXX	–	XXX	XXX	31	0.51	–	0.45	0.31	0.46
32	XXX	XXX	XXX	XXX	XXX	32	0.52	0.35	0.45	0.32	0.47
32,75	XXX	XXX	–	XXX	–	32	0.53	–	0.46	0.32	–
33	XXX	XXX	–	XXX	XXX	33	0.54	–	0.46	0.32	0.49
34	XXX	XXX	–	XXX	XXX	34	0.55	–	0.47	0.33	0.5
35	XXX	XXX	–	XXX	XXX	35	0.56	–	0.47	0.33	0.5
36	XXX	XXX	–	XXX	XXX	36	0.57	–	0.48	0.33	0.51

HOLEX Flat drills

232240/232245/232257/232258/232271/232272/ – **Straight fluted.**
23 2255/2256/2265/2270/2274/2275 Size 36/48 – **Straight fluted.**

Note: Further sizes available on request.
23 2255/2265/2274 – Reduce feed rates f by 5% and v_c values by 10%.
23 2256/2270/2275 – Reduce feed rates f by 10% and v_c values by 30%.

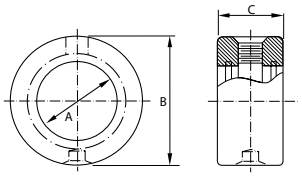


Type	22G 23 2240	22G 23 2245	22G 23 2250	22G 23 2255	22G 23 2256	∅ range D	L_N					∅ D_s	L_s	Clamping screws
	Base body													
	Parallel shank, with through-coolant						23 2240	23 2245	23 2250	23 2255	23 2256			
	1.5×D	3×D	5×D	8×D	12×D	mm	mm	mm	mm	mm	mm	mm	mm	
12	XXX	XXX	XXX	XXX	XXX	12 – 12.5	18.8	31.8	60.3	111.1	144	20	50	232990_TX7
13	XXX	XXX	XXX	XXX	XXX	13 – 17.5	26	34.9	63.5	114.3	156	20	50	232990_TX8
18	XXX	XXX	XXX	XXX	XXX	18 – 24	36	66.7	168.3	269.9	288	25	56	232990_TX9
25	XXX	XXX	XXX	XXX	XXX	25 – 35	52.5	85.7	187.3	288.9	300	32	60	232990_TX15
36	XXX	XXX	XXX	XXX	XXX	36 – 47	70.5	120.7	209.6	349.3	432	40	70	232990_TX20
48	XXX	XXX	XXX	XXX	XXX	48 – 65	97.5	130.2	231.8	422.3	576	40	70	232990_TX20

Type	22G 23 2257	22G 23 2258	22G 23 2260	22G 23 2265	22G 23 2270	∅ range D	L_N					MT	Clamping screws
	Base body												
	MT shank, without through-coolant						23 2257	23 2258	23 2260	23 2265	23 2270		
	1.5×D	3×D	5×D	8×D	12×D	mm	mm	mm	mm	mm	mm		
12	XXX	XXX	XXX	XXX	XXX	12 – 12.5	18.8	31.8	60.3	111.1	144	2	232990_TX7
13	XXX	XXX	XXX	XXX	XXX	13 – 17.5	26	35	63.5	114.3	156	2	232990_TX8
18	XXX	XXX	XXX	XXX	XXX	18 – 24	36	69.8	171.5	273.1	288	3	232990_TX9
25	XXX	XXX	XXX	XXX	XXX	25 – 35	52.5	85.7	187.3	289	300	4	232990_TX15
36	XXX	XXX	XXX	XXX	XXX	36 – 47	70.5	120.6	209.5	349.3	432	4	232990_TX20
48	XXX	XXX	XXX	XXX	XXX	48 – 65	97.5	130.1	231.8	422.3	576	5	232990_TX20

Type	22G 23 2271	22G 23 2272	22G 23 2273	22G 23 2274	22G 23 2275	∅ range D	L_N					MT	Clamping screws
	Base body 6371G-50-500-040												
	MT shank, with through-coolant						23 2271	23 2272	23 2273	23 2274	23 2275		
	1.5×D	3×D	5×D	8×D	12×D	mm	mm	mm	mm	mm	mm		
12	XXX	XXX	XXX	XXX	XXX	12 – 12.5	18.8	31.8	60.3	111.1	144	2	232990_TX7
13	XXX	XXX	XXX	XXX	XXX	13 – 17.5	26	35	63.5	114.3	156	2	232990_TX8
18	XXX	XXX	XXX	XXX	XXX	18 – 24	36	69.8	171.5	273.1	288	3	232990_TX9
25	XXX	XXX	XXX	XXX	XXX	25 – 35	52.5	85.7	187.3	289	300	4	232990_TX15
36	XXX	XXX	XXX	XXX	XXX	36 – 47	70.5	120.6	209.5	349.3	432	4	232990_TX20
48	XXX	XXX	XXX	XXX	XXX	48 – 65	97.5	130.1	231.8	422.3	576	5	232990_TX20

Coolant supply ring for MT flat drills with through-coolant.
The coolant supply ring is mounted on the drill. The coolant can be fed from outside via the coolant hose connections through the ring and into the cooling channels.
Suitable for:
23 2277 – **HOLEX flat drills No. 232271 - 232275.**
23 2278/2279 – **Coolant feed ring No. 232277.**



23 2277

Size	22G 23 2277	for flat drill size	Internal ∅ A	External ∅ B	Height C	Coolant hose port
	Coolant ring for flat drills		mm	mm	mm	inch
1	XXX	12; 13	19.05	44.45	22.23	R 1/8
2	XXX	18; 25	25.4	53.97	28.57	R 1/8
3	XXX	36	31.75	63.5	34.92	R 1/4
4	XXX	48	44.45	76.2	34.92	R 1/4

23 2278

Size	22G 23 2278	for coolant ring size	suitable for hose outer ∅	Connection thread
	Hose coupling for coolant		mm	inch
1	XXX	1; 2	10	R 1/8
2	XXX	1; 2	12	R 1/8
3	XXX	3; 4	10	R 1/4
4	XXX	3; 4	12	R 1/4

23 2279

Size	22G 23 2279	for coolant ring size	suitable for hose inner ∅	Connection thread
	Hose coupling for coolant		mm	inch
1	XXX	1; 2	9	R 1/8
2	XXX	3; 4	9	R 1/4

132°

HOLEX Drill inserts for flat drills

Exchangeable HSS cutter for universal application. Cannot be reground.
With chip breaker. Pointed tip for high stability and self-centring.

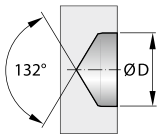
Note: Further sizes available on request.

HSS

23 2282

HSS E-PM

23 2286



Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	CuZn
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	K	N
23 2282	180	130	100	45	45	30	25							22	22		45	90
23 2286	200	200	120	65	60	55	50	30						30	20	15	60	140

Ø D mm	22F 23 2282 HSS TiN	22F 23 2286 HSS-E-PM TiAlN	for base body type	< 900 N f 23 2282 mm/rev.	< 900 N f 23 2286 mm/rev.	INOX > 900 N f 23 2282 mm/rev.	INOX > 900 N f 23 2286 mm/rev.
	Drill insert with pointed tip						
12	XXX	XXX	12	0.08	0.13	0.12	0.12
12,5	XXX	XXX	12	0.08	0.13	0.12	0.12
13	XXX	XXX	13	0.14	0.19	0.17	0.18
13,5	XXX	XXX	13	0.14	0.19	0.17	0.18
14	XXX	XXX	13	0.14	0.19	0.17	0.18
14,5	XXX	XXX	13	0.14	0.19	0.17	0.18
15	XXX	XXX	13	0.14	0.19	0.17	0.18
15,5	XXX	XXX	13	0.14	0.19	0.17	0.18
16	XXX	XXX	13	0.14	0.19	0.17	0.18
16,5	XXX	XXX	13	0.14	0.19	0.17	0.18
17	XXX	XXX	13	0.14	0.19	0.17	0.18
17,5	XXX	XXX	13	0.14	0.19	0.17	0.18
18	XXX	XXX	18	0.18	0.23	0.19	0.2
18,5	XXX	XXX	18	0.18	0.23	0.19	0.2
19	XXX	XXX	18	0.18	0.23	0.19	0.2
19,5	XXX	XXX	18	0.18	0.23	0.19	0.2
20	XXX	XXX	18	0.18	0.23	0.19	0.2
20,5	XXX	XXX	18	0.18	0.23	0.19	0.2
21	XXX	XXX	18	0.18	0.23	0.19	0.2
22	XXX	XXX	18	0.18	0.23	0.19	0.2
23	XXX	XXX	18	0.18	0.23	0.19	0.2
24	XXX	XXX	18	0.18	0.23	0.19	0.2
25	XXX	XXX	25	0.25	0.34	0.24	0.24
26	XXX	XXX	25	0.25	0.34	0.24	0.24
26,5	XXX	XXX	25	0.25	0.34	0.24	0.24
27	XXX	XXX	25	0.25	0.34	0.24	0.24
28	XXX	XXX	25	0.25	0.34	0.24	0.24
29	XXX	XXX	25	0.25	0.34	0.24	0.24
30	XXX	XXX	25	0.25	0.34	0.24	0.24
31	XXX	XXX	25	0.25	0.34	0.24	0.24
32	XXX	XXX	25	0.25	0.34	0.24	0.24
33	XXX	XXX	25	0.25	0.34	0.24	0.24

Ø D mm	22F 23 2282 HSS TiN	22F 23 2286 HSS-E-PM TiAlN	for base body type	< 900 N f 23 2282 mm/rev.	< 900 N f 23 2286 mm/rev.	INOX > 900 N f 23 2282 mm/rev.	INOX > 900 N f 23 2286 mm/rev.
	Drill insert with pointed tip						
34	XXX	XXX	25	0.25	0.34	0.24	0.24
35	XXX	XXX	25	0.25	0.34	0.24	0.24
36	XXX	XXX	36	0.25	0.43	0.28	0.3
37	XXX	XXX	36	0.25	0.43	0.28	0.3
38	XXX	XXX	36	0.25	0.43	0.28	0.3
39	XXX	XXX	36	0.25	0.43	0.28	0.3
40	XXX	XXX	36	0.25	0.43	0.28	0.3
41	XXX	XXX	36	0.25	0.43	0.28	0.3
42	XXX	XXX	36	0.25	0.43	0.28	0.3
43	XXX	XXX	36	0.25	0.43	0.28	0.3
44	XXX	XXX	36	0.25	0.43	0.28	0.3
45	XXX	XXX	36	0.25	0.43	0.28	0.3
46	XXX	XXX	36	0.25	0.43	0.28	0.3
47	XXX	XXX	36	0.25	0.43	0.28	0.3
48	XXX	XXX	48	0.25	0.43	0.28	0.3
49	XXX	XXX	48	0.25	0.43	0.28	0.3
50	XXX	XXX	48	0.29	0.5	0.35	0.36
51	XXX	XXX	48	0.29	0.5	0.35	0.36
52	XXX	XXX	48	0.29	0.5	0.35	0.36
53	XXX	XXX	48	0.29	0.5	0.35	0.36
54	XXX	XXX	48	0.29	0.5	0.35	0.36
55	XXX	XXX	48	0.29	0.5	0.35	0.36
56	XXX	XXX	48	0.29	0.5	0.35	0.36
57	XXX	XXX	48	0.29	0.5	0.35	0.36
58	XXX	XXX	48	0.29	0.5	0.35	0.36
59	XXX	XXX	48	0.29	0.5	0.35	0.36
60	XXX	XXX	48	0.29	0.5	0.35	0.36
61	XXX	XXX	48	0.29	0.5	0.35	0.36
62	XXX	XXX	48	0.29	0.5	0.35	0.36
63	XXX	XXX	48	0.29	0.5	0.35	0.36
64	XXX	XXX	48	0.29	0.5	0.35	0.36
65	XXX	XXX	48	0.29	0.5	0.35	0.36

DIN 6535 HE 6595 | MTC | 2×D | 3×D | 4×D

Garant

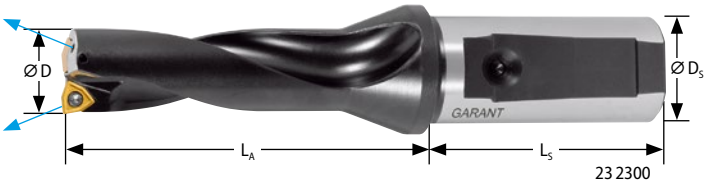
Universal indexable drill MTC right-hand cutting, with combination shank

High stability and very high process reliability.

23 2302 – With **shank Ø 20 mm,** particularly suitable for **driven tools** (see Group 31).

Application: **For stationary** and **rotating application.**
For holes free of withdrawal scoring and exact dimensional accuracy (approx. ± 0.1 mm).
Also suitable for machines with low drive power.
Especially for **MTC (Multi Task Cutting)** use on the new generation of turning/milling centres **(MTM).**
With indexable inserts No. 232400 – 232780.

Note: **CAUTION!**
A disc falls off when the drill exits.
Risk of injury if the component is rotating.
Please take safety precautions.
Counterboring tools with up to 2 steps to your specification available on request.
(Minimum order quantity: 2 pieces)



23 2300

23 2302

Ø D	21S 23 2298	21S 23 2300	21S 23 2302	21S 23 2310	L_A			Ø D_s			L_s			ISO code indexable insert	Pack of insert screws
	Indexable drill combination shank				23 2298	23 2300 23 2302	23 2310	23 2298 23 2310	23 2300	23 2302	23 2298 23 2310	23 2300	23 2302		
mm	2×D	3×D	Shank Ø 20 mm 3×D	4×D	mm	mm	mm	mm	mm	mm	mm	mm	mm		
14	XXX	XXX	XXX	XXX	52	66	80	20	25	20	50	56	50	WOEX 030204	239700_6IP (0.6 Nm)
15	XXX	XXX	XXX	XXX	54	69	84	20	25	20	50	56	50	WOEX 030204	239700_6IP (0.6 Nm)
16	XXX	XXX	XXX	XXX	56	72	88	20	25	20	50	56	50	WOEX 030204	239700_6IP (0.6 Nm)
17	XXX	XXX	XXX	XXX	58	75	92	20	25	20	50	56	50	WOEX 030204	239700_6IP (0.6 Nm)
17,5	–	XXX	XXX	–	–	78	–	–	25	20	–	56	50	WOEX 030204	239700_6IP (0.6 Nm)
18	XXX	XXX	XXX	XXX	60	78	96	20	25	20	50	56	50	WOEX 030204	239700_6IP (0.6 Nm)
18,5	–	XXX	XXX	–	–	81	–	–	25	20	–	56	50	WOEX 030204	239700_6IP (0.6 Nm)
19	XXX	XXX	XXX	XXX	62	81	100	20	25	20	50	56	50	WOEX 030204	239700_6IP (0.6 Nm)
19,5	–	XXX	XXX	–	–	84	–	–	25	20	–	56	50	WOEX 030204	239700_6IP (0.6 Nm)
20	XXX	XXX	XXX	XXX	64	84	104	25	25	20	56	56	50	WOEX 040304	239700_6IP1 (1.0 Nm)
21	XXX	XXX	XXX	XXX	66	87	108	25	25	20	56	56	50	WOEX 040304	239700_6IP1 (1.0 Nm)
22	XXX	XXX	XXX	XXX	68	90	112	25	25	20	56	56	50	WOEX 040304	239700_6IP1 (1.0 Nm)
22,5	–	XXX	XXX	–	–	93	–	–	25	20	–	56	50	WOEX 040304	239700_6IP1 (1.0 Nm)
23	XXX	XXX	XXX	XXX	70	93	116	25	25	20	56	56	50	WOEX 040304	239700_6IP1 (1.0 Nm)
24	XXX	XXX	XXX	XXX	72	96	120	25	25	20	56	56	50	WOEX 040304	239700_6IP1 (1.0 Nm)
24,5	XXX	XXX	XXX	–	74	99	–	25	25	20	56	56	50	WOEX 040304	239700_6IP1 (1.0 Nm)
25	XXX	XXX	–	XXX	74	99	124	32	25	–	60	56	–	WOEX 05T304	239700_8IP (1.3 Nm)
26	XXX	XXX	–	XXX	76	102	128	32	32	–	60	60	–	WOEX 05T304	239700_8IP (1.3 Nm)
26,5	XXX	XXX	–	–	78	105	–	32	32	–	60	60	–	WOEX 05T304	239700_8IP (1.3 Nm)
27	XXX	XXX	–	XXX	78	105	132	32	32	–	60	60	–	WOEX 05T304	239700_8IP (1.3 Nm)
28	XXX	XXX	–	XXX	80	108	136	32	32	–	60	60	–	WOEX 05T304	239700_8IP (1.3 Nm)
29	XXX	XXX	–	XXX	82	111	140	32	32	–	60	60	–	WOEX 05T304	239700_8IP (1.3 Nm)
29,5	–	XXX	–	–	–	114	–	–	32	–	–	60	–	WOEX 05T304	239700_8IP (1.3 Nm)
30	XXX	XXX	–	XXX	89	119	149	32	32	–	60	60	–	WOEX 05T304	239700_8IP (1.3 Nm)
31	XXX	XXX	–	XXX	91	122	153	32	32	–	60	60	–	WOEX 05T304	239700_8IP (1.3 Nm)
32	XXX	XXX	–	XXX	93	125	157	32	32	–	60	60	–	WOEX 05T304	239700_8IP (1.3 Nm)
33	XXX	XXX	–	XXX	95	128	161	32	32	–	60	60	–	WOEX 05T304	239700_8IP (1.3 Nm)
34	XXX	XXX	–	XXX	97	131	165	32	32	–	60	60	–	WOEX 05T304	239700_8IP (1.3 Nm)
35	XXX	XXX	–	XXX	99	134	169	32	32	–	60	60	–	WOEX 05T304	239700_8IP (1.3 Nm)
36	XXX	XXX	–	XXX	101	137	173	32	32	–	60	60	–	WOEX 05T304	239700_8IP (1.3 Nm)
37	XXX	XXX	–	–	113	150	–	32	32	–	60	60	–	WOEX 06T304	239700_10IP (2.8 Nm)
38	XXX	XXX	–	–	115	153	–	32	32	–	60	60	–	WOEX 06T304	239700_10IP (2.8 Nm)
39	XXX	XXX	–	–	117	156	–	32	32	–	60	60	–	WOEX 06T304	239700_10IP (2.8 Nm)
39,5	–	XXX	–	–	–	159	–	–	32	–	–	60	–	WOEX 06T304	239700_10IP (2.8 Nm)
40	XXX	XXX	–	–	119	159	–	32	32	–	60	60	–	WOEX 06T304	239700_10IP (2.8 Nm)
41	XXX	XXX	–	–	121	162	–	32	32	–	60	60	–	WOEX 06T304	239700_10IP (2.8 Nm)
42	XXX	XXX	–	–	123	165	–	32	32	–	60	60	–	WOEX 06T304	239700_10IP (2.8 Nm)
43	XXX	XXX	–	–	125	168	–	32	32	–	60	60	–	WOEX 06T304	239700_10IP (2.8 Nm)
44	XXX	XXX	–	–	127	171	–	32	32	–	60	60	–	WOEX 06T304	239700_10IP (2.8 Nm)

Indexable inserts WOEX.. for universal indexable drill MTC

Suitable for: GARANT indexable drills No. 232298 / 2300 / 2302 / 2310.

Note:
23 2440/2540/2640/2740 – **Do not use in the centre pocket of indexable drills!**

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	CuZn	Graphite GRP CRP	Uni
ISO code	N	N	N	P	P	P	P	P	H	H	H	M	M	S	K	N	N	
HB 7305															175			
HB 7630				275	275	215	125	125							175			
HB 7635				275	275	215						165	165	80				
HB 330				275	275	275						165	165	80				●
HU 7310	350	200	200											80				
HB 7310	350	200	200													300	150	
HB 7640				275	275	215						165	165	80				

slightly honed | *honed* | *chamfered and honed* | *chamfered and honed* | *honed* | *chamfered and honed* | *chamfered and honed*

Type			ALU	ST500	ST900	ST1400	INOX	GG	UNI	
21E 23 2400	WOEX 030204 S	HB7305	–	–	–	–	–	XXX	–	10
21E 23 2410		HB7630	–	–	–	XXX	–	–	–	10
21E 23 2420		HB7635	–	–	XXX	–	–	–	–	10
21E 23 2435	WOEX 030204 T	HB330	–	–	–	–	–	–	XXX	10
21E 23 2440	WOEX 030204 E	HB7635	–	XXX	–	–	–	–	–	10
21E 23 2450	WOEX 030204 F	HU7310	XXX	–	–	–	–	–	–	10
21E 23 2460		HB7310	XXX	–	–	–	–	–	–	10
21E 23 2470	WOEX 030204 E	HB7635	–	–	–	–	XXX	–	–	10
21E 23 2480		HB7640	–	–	–	–	XXX	–	–	10
f		mm/rev.	0.05	0.08	0.08	0.05	0.06	0.08	0.06	

Type			ALU	ST500	ST900	ST1400	INOX	GG	UNI	
21E 23 2500	WOEX 040304 S	HB7305	–	–	–	–	–	XXX	–	10
21E 23 2510		HB7630	–	–	–	XXX	–	–	–	10
21E 23 2520		HB7635	–	–	XXX	–	–	–	–	10
21E 23 2535	WOEX 040304 T	HB330	–	–	–	–	–	–	XXX	10
21E 23 2540	WOEX 040304 E	HB7635	–	XXX	–	–	–	–	–	10
21E 23 2550	WOEX 040304 F	HU7310	XXX	–	–	–	–	–	–	10
21E 23 2560		HB7310	XXX	–	–	–	–	–	–	10
21E 23 2570	WOEX 040304 E	HB7635	–	–	–	–	XXX	–	–	10
21E 23 2580		HB7640	–	–	–	–	XXX	–	–	10
f		mm/rev.	0.08	0.1	0.13	0.1	0.08	0.14	0.08	

Type			ALU	ST500	ST900	ST1400	INOX	GG	UNI	
21E 23 2600	WOEX 05T304 S	HB7305	–	–	–	–	–	XXX	–	10
21E 23 2610		HB7630	–	–	–	XXX	–	–	–	10
21E 23 2620		HB7635	–	–	XXX	–	–	–	–	10
21E 23 2635	WOEX 05T304 T	HB330	–	–	–	–	–	–	XXX	10
21E 23 2640	WOEX 05T304 E	HB7635	–	XXX	–	–	–	–	–	10
21E 23 2650	WOEX 05T304 F	HU7310	XXX	–	–	–	–	–	–	10
21E 23 2660		HB7310	XXX	–	–	–	–	–	–	10
21E 23 2670	WOEX 05T304 E	HB7635	–	–	–	–	XXX	–	–	10
21E 23 2680		HB7640	–	–	–	–	XXX	–	–	10
f		mm/rev.	0.1	0.12	0.14	0.1	0.12	0.2	0.1	

Type			ALU	ST500	ST900	ST1400	INOX	GG	UNI	
21E 23 2700	WOEX 06T304 S	HB7305	–	–	–	–	–	XXX	–	10
21E 23 2710		HB7630	–	–	–	XXX	–	–	–	10
21E 23 2720		HB7635	–	–	XXX	–	–	–	–	10
21E 23 2735	WOEX 06T304 T	HB330	–	–	–	–	–	–	XXX	10
21E 23 2740	WOEX 06T304 E	HB7635	–	XXX	–	–	–	–	–	10
21E 23 2750	WOEX 06T304 F	HU7310	XXX	–	–	–	–	–	–	10
21E 23 2760		HB7310	XXX	–	–	–	–	–	–	10
21E 23 2770	WOEX 06T304 E	HB7635	–	–	–	–	XXX	–	–	10
21E 23 2780		HB7640	–	–	–	–	XXX	–	–	10
f		mm/rev.	0.1	0.12	0.14	0.12	0.12	0.2	0.12	

ISO 9766 | HPC | 2×D | 3×D | 4×D | 5×D

GARANT Power Drill indexable drill for right-hand cutting, plain shank with drive flats

The helical coolant ducts ensure very high stability, since they do not weaken the core of the drill.

23 4000/4005 – **Bore tolerance:** –0.1 / +0.3 mm

23 4010/4015 – **Bore tolerance:** –0.1 / +0.35 mm

Description: The GARANT Power Drill for very high performance and dimensional accuracy. Even for very difficult drilling situations up to 5×D.

Application: With indexable inserts No. 234030 - 234098.

Recommendation:

23 4015 – **When spot-drilling** reduce the feed rate by 70 %.

Note: Other intermediate sizes in 1/10 increments available on request.

23 4010

∅ D	215 23 4000	215 23 4005	215 23 4010	215 23 4015	for inch ∅	L_A				$∅ D_s$	L_s	ISO code indexable insert	Pack of insert screws
	GARANT Power Drill indexable drill												
	Combination shank					23 4000	23 4005	23 4010	23 4015				
mm	2×D	3×D	4×D	5×D	inch	mm	mm	mm	mm	mm	mm		
14	XXX	XXX	XXX	XXX	–	41	55	69	83	20	50	SOGX 050204	239700_5IP (0.38 Nm)
14,5	XXX	XXX	XXX	XXX	–	44	59	74	89	20	50	SOGX 050204	239700_5IP (0.38 Nm)
15	XXX	XXX	XXX	XXX	19/32	44	59	74	89	20	50	SOGX 050204	239700_5IP (0.38 Nm)
15,5	XXX	XXX	XXX	XXX	–	48	64	80	96	20	50	SOGX 050204	239700_5IP (0.38 Nm)
16	XXX	XXX	XXX	XXX	–	48	64	80	96	20	50	SOGX 050204	239700_5IP (0.38 Nm)
16,5	XXX	XXX	XXX	XXX	–	51	68	85	102	20	50	SOGX 060305	239700_6IP2 (0.6 Nm)
17	XXX	XXX	XXX	XXX	–	51	68	85	102	20	50	SOGX 060305	239700_6IP2 (0.6 Nm)
17,5	XXX	XXX	XXX	XXX	11/16	53	71	89	107	25	56	SOGX 060305	239700_6IP2 (0.6 Nm)
18	XXX	XXX	XXX	XXX	–	53	71	89	107	25	56	SOGX 060305	239700_6IP2 (0.6 Nm)
18,5	XXX	XXX	XXX	XXX	–	56	75	94	113	25	56	SOGX 060305	239700_6IP2 (0.6 Nm)
19	XXX	XXX	XXX	XXX	3/4	56	75	94	113	25	56	SOGX 060305	239700_6IP2 (0.6 Nm)
19,5	XXX	XXX	XXX	XXX	–	58	78	98	118	25	56	SOGX 070306	239700_6IP1 (1.0 Nm)
20	XXX	XXX	XXX	XXX	–	58	78	98	118	25	56	SOGX 070306	239700_6IP1 (1.0 Nm)
20,5	XXX	XXX	XXX	XXX	–	61	82	103	124	25	56	SOGX 070306	239700_6IP1 (1.0 Nm)
21	XXX	XXX	XXX	XXX	–	61	82	103	124	25	56	SOGX 070306	239700_6IP1 (1.0 Nm)
21,5	XXX	XXX	XXX	XXX	27/32	63	85	107	129	25	56	SOGX 070306	239700_6IP1 (1.0 Nm)
22	XXX	XXX	XXX	XXX	–	63	85	107	129	25	56	SOGX 070306	239700_6IP1 (1.0 Nm)
22,5	XXX	XXX	XXX	XXX	–	66	89	112	135	25	56	SOGX 070306	239700_6IP1 (1.0 Nm)
23	XXX	XXX	XXX	XXX	–	66	89	112	135	25	56	SOGX 080407	239700_8IP (1.3 Nm)
23,5	XXX	XXX	XXX	XXX	–	68	92	116	140	32	60	SOGX 080407	239700_8IP (1.3 Nm)
24	XXX	XXX	XXX	XXX	–	68	92	116	140	32	60	SOGX 080407	239700_8IP (1.3 Nm)
24,5	XXX	XXX	XXX	XXX	–	71	96	121	146	32	60	SOGX 080407	239700_8IP (1.3 Nm)
25	XXX	XXX	XXX	XXX	–	71	96	121	146	32	60	SOGX 080407	239700_8IP (1.3 Nm)
25,5	XXX	XXX	XXX	XXX	1	73	99	125	151	32	60	SOGX 080407	239700_8IP (1.3 Nm)
26	XXX	XXX	XXX	XXX	–	73	99	125	151	32	60	SOGX 080407	239700_8IP (1.3 Nm)
26,5	XXX	XXX	XXX	XXX	–	76	103	130	157	32	60	SOGX 080407	239700_8IP (1.3 Nm)
27	XXX	XXX	XXX	XXX	1 1/16	76	103	130	157	32	60	SOGX 100408	239700_10IP (2.8 Nm)
27,5	XXX	XXX	XXX	XXX	–	78	106	134	162	32	60	SOGX 100408	239700_10IP (2.8 Nm)
28	XXX	XXX	XXX	XXX	–	78	106	134	162	32	60	SOGX 100408	239700_10IP (2.8 Nm)
28,5	XXX	XXX	XXX	XXX	1 1/8	81	110	139	168	32	60	SOGX 100408	239700_10IP (2.8 Nm)
29	XXX	XXX	XXX	XXX	–	81	110	139	168	32	60	SOGX 100408	239700_10IP (2.8 Nm)
29,5	XXX	XXX	XXX	XXX	–	83	113	143	173	32	60	SOGX 100408	239700_10IP (2.8 Nm)
30	XXX	XXX	XXX	XXX	–	83	113	143	173	32	60	SOGX 100408	239700_10IP (2.8 Nm)
30,5	XXX	XXX	XXX	XXX	–	86	117	148	179	40	68	SOGX 100408	239700_10IP (2.8 Nm)
31	XXX	XXX	XXX	XXX	1 7/32	86	117	148	179	40	68	SOGX 100408	239700_10IP (2.8 Nm)
31,5	XXX	XXX	XXX	XXX	–	88	120	152	184	40	68	SOGX 100408	239700_10IP (2.8 Nm)
32	XXX	XXX	XXX	XXX	–	88	120	152	184	40	68	SOGX 110509	239700_15IP (2.8 Nm)
32,5	XXX	XXX	XXX	XXX	1 9/32	91	124	157	190	40	68	SOGX 110509	239700_15IP (2.8 Nm)
33	XXX	XXX	XXX	XXX	–	91	124	157	190	40	68	SOGX 110509	239700_15IP (2.8 Nm)
33,5	XXX	XXX	XXX	XXX	–	93	127	161	195	40	68	SOGX 110509	239700_15IP (2.8 Nm)
34	XXX	XXX	XXX	XXX	–	93	127	161	195	40	68	SOGX 110509	239700_15IP (2.8 Nm)
34,5	XXX	XXX	XXX	XXX	–	96	131	166	201	40	68	SOGX 110509	239700_15IP (2.8 Nm)
35	XXX	XXX	XXX	XXX	1 3/8	96	131	166	201	40	68	SOGX 110509	239700_15IP (2.8 Nm)
35,5	XXX	XXX	XXX	XXX	–	98	134	170	206	40	68	SOGX 110509	239700_15IP (2.8 Nm)
36	XXX	XXX	XXX	XXX	–	98	134	170	206	40	68	SOGX 110509	239700_15IP (2.8 Nm)
36,5	XXX	XXX	XXX	XXX	1 7/16	101	138	175	212	40	68	SOGX 110509	239700_15IP (2.8 Nm)
37	XXX	XXX	XXX	XXX	–	101	138	175	212	40	68	SOGX 110509	239700_15IP (2.8 Nm)
37,5	XXX	XXX	XXX	XXX	–	103	141	179	217	40	68	SOGX 130511	239700_20IP (6.3 Nm)
38	XXX	XXX	XXX	XXX	1 1/2	103	141	179	217	40	68	SOGX 130511	239700_20IP (6.3 Nm)
38,5	XXX	XXX	XXX	XXX	–	106	145	184	223	40	68	SOGX 130511	239700_20IP (6.3 Nm)
39	XXX	XXX	XXX	XXX	–	106	145	184	223	40	68	SOGX 130511	239700_20IP (6.3 Nm)
39,5	XXX	XXX	XXX	XXX	–	108	148	188	228	40	68	SOGX 130511	239700_20IP (6.3 Nm)
40	XXX	XXX	XXX	XXX	–	108	148	188	228	40	68	SOGX 130511	239700_20IP (6.3 Nm)
40,5	XXX	XXX	XXX	XXX	1 19/32	111	152	193	234	40	68	SOGX 130511	239700_20IP (6.3 Nm)
41	XXX	XXX	XXX	XXX	–	111	152	193	234	40	68	SOGX 130511	239700_20IP (6.3 Nm)
41,5	XXX	XXX	XXX	XXX	–	113	155	197	239	40	68	SOGX 130511	239700_20IP (6.3 Nm)
42	XXX	XXX	XXX	XXX	1 21/32	113	155	197	239	40	68	SOGX 130511	239700_20IP (6.3 Nm)
42,5	XXX	XXX	XXX	XXX	–	116	159	202	245	40	68	SOGX 130511	239700_20IP (6.3 Nm)
43	XXX	XXX	XXX	XXX	–	116	159	202	245	40	68	SOGX 130511	239700_20IP (6.3 Nm)
43,5	XXX	XXX	XXX	XXX	–	118	162	206	250	40	68	SOGX 130511	239700_20IP (6.3 Nm)
44	XXX	XXX	XXX	XXX	–	118	162	206	250	40	68	SOGX 130511	239700_20IP (6.3 Nm)

GARANT Power Drill SOGX.. Indexable inserts for indexable drill

Suitable for: GARANT Power Drill No. 234000 – 234015.

Recommendation: When spot drilling with holder No. 234015, reduce the feed rate to 70%.

Note:
23 4034/4037/4044/4047/4054/4057/4064/4067/4074/4077/4084/4087/4094/4097 – Not for use as an internal cutter (it is essential that an internal cutter be of material grade HB630).

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	CuZn	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	M	M	S	K	N						
HB 6810	500	300	220																	●			
HB 6535				270	250	220	180						170	150			250			●			
HB 6530						230	190	160												●			
HB 6640													180	160	75					●			
HB 6715																200						●	
HB 630				260	240	210	170	140					160	140		140		●		●			

Type			ALU	ST900	ST1400	INOX	GG	UNI		f mm/rev.
21E 23 4030	SOGX 050204	HBD30	XXX	–	–	–	–	–	10	0.06 - 0.18
21E 23 4032		HB6535	–	XXX	–	–	–	XXX	10	0.05 - 0.1
21E 23 4034		HB6530	–	–	XXX	–	–	–	10	0.06 - 0.12
21E 23 4036		HB6640	–	–	–	XXX	–	–	10	0.05 - 0.1
21E 23 4037		HB6715	–	–	–	–	XXX	–	10	0.04 - 0.18
21E 23 4038		HB630	–	–	–	–	–	XXX	10	0.04 – 0.16
21E 23 4040	SOGX 060305	HBD30	XXX	–	–	–	–	–	10	0.06 - 0.18
21E 23 4042		HB6535	–	XXX	–	–	–	XXX	10	0.06 - 0.12
21E 23 4044		HB6530	–	–	XXX	–	–	–	10	0.06 - 0.12
21E 23 4046		HB6640	–	–	–	XXX	–	–	10	0.05 - 0.1
21E 23 4047		HB6715	–	–	–	–	XXX	–	10	0.05 - 0.18
21E 23 4048		HB630	–	–	–	–	–	XXX	10	0.05 – 0.16
21E 23 4050	SOGX 070306	HBD30	XXX	–	–	–	–	–	10	0.06 - 0.21
21E 23 4052		HB6535	–	XXX	–	–	–	XXX	10	0.08 - 0.14
21E 23 4054		HB6530	–	–	XXX	–	–	–	10	0.08 - 0.14
21E 23 4056		HB6640	–	–	–	XXX	–	–	10	0.06 - 0.12
21E 23 4057		HB6715	–	–	–	–	XXX	–	10	0.05 - 0.22
21E 23 4058		HB630	–	–	–	–	–	XXX	10	0.05 – 0.2
21E 23 4060	SOGX 080407	HBD30	XXX	–	–	–	–	–	10	0.08 - 0.21
21E 23 4062		HB6535	–	XXX	–	–	–	XXX	10	0.08 - 0.16
21E 23 4064		HB6530	–	–	XXX	–	–	–	10	0.08 - 0.16
21E 23 4066		HB6640	–	–	–	XXX	–	–	10	0.07 - 0.14
21E 23 4067		HB6715	–	–	–	–	XXX	–	10	0.09 - 0.28
21E 23 4068		HB630	–	–	–	–	–	XXX	10	0.07 – 0.2
21E 23 4070	SOGX 100408	HBD30	XXX	–	–	–	–	–	10	0.08 - 0.21
21E 23 4072		HB6535	–	XXX	–	–	–	XXX	10	0.08 - 0.16
21E 23 4074		HB6530	–	–	XXX	–	–	–	10	0.08 - 0.16
21E 23 4076		HB6640	–	–	–	XXX	–	–	10	0.07 - 0.14
21E 23 4077		HB6715	–	–	–	–	XXX	–	10	0.13 - 0.3
21E 23 4078		HB630	–	–	–	–	–	XXX	10	0.07 – 0.2
21E 23 4080	SOGX 110509	HBD30	XXX	–	–	–	–	–	10	0.08 - 0.21
21E 23 4082		HB6535	–	XXX	–	–	–	XXX	10	0.08 - 0.18
21E 23 4084		HB6530	–	–	XXX	–	–	–	10	0.08 - 0.18
21E 23 4086		HB6640	–	–	–	XXX	–	–	10	0.07 - 0.16
21E 23 4087		HB6715	–	–	–	–	XXX	–	10	0.13 - 0.3
21E 23 4088		HB630	–	–	–	–	–	XXX	10	0.08 – 0.2
21E 23 4090	SOGX 130511	HBD30	XXX	–	–	–	–	–	10	0.08 - 0.21
21E 23 4092		HB6535	–	XXX	–	–	–	XXX	10	0.09 - 0.2
21E 23 4094		HB6530	–	–	XXX	–	–	–	10	0.09 - 0.2
21E 23 4096		HB6640	–	–	–	XXX	–	–	10	0.08 - 0.18
21E 23 4097		HB6715	–	–	–	–	XXX	–	10	0.13 - 0.3
21E 23 4098		HB630	–	–	–	–	–	XXX	10	0.08 – 0.2

ISO 9766 | HPC | 2×D | 3×D | 4×D

HOLEX Pro Drill indexable drill for right-hand cutting, plain shank with drive flats

HOLEX Pro Drill indexable drills combine cost efficiency with technically fully developed capability.
For use up to 4×D in challenging drilling applications.

23 5010 – **Bore tolerance:** -0.05 / +0.3 mm
23 5000/5005 – **Bore tolerance:** -0.1 / +0.25 mm

Application: With indexable inserts No. 235030 – 235082.
Both SOMT inserts for the outer insert seats and also XOMT inserts for the inner insert seats are required.

Supplied with: With insert screws (supplied without indexable inserts).

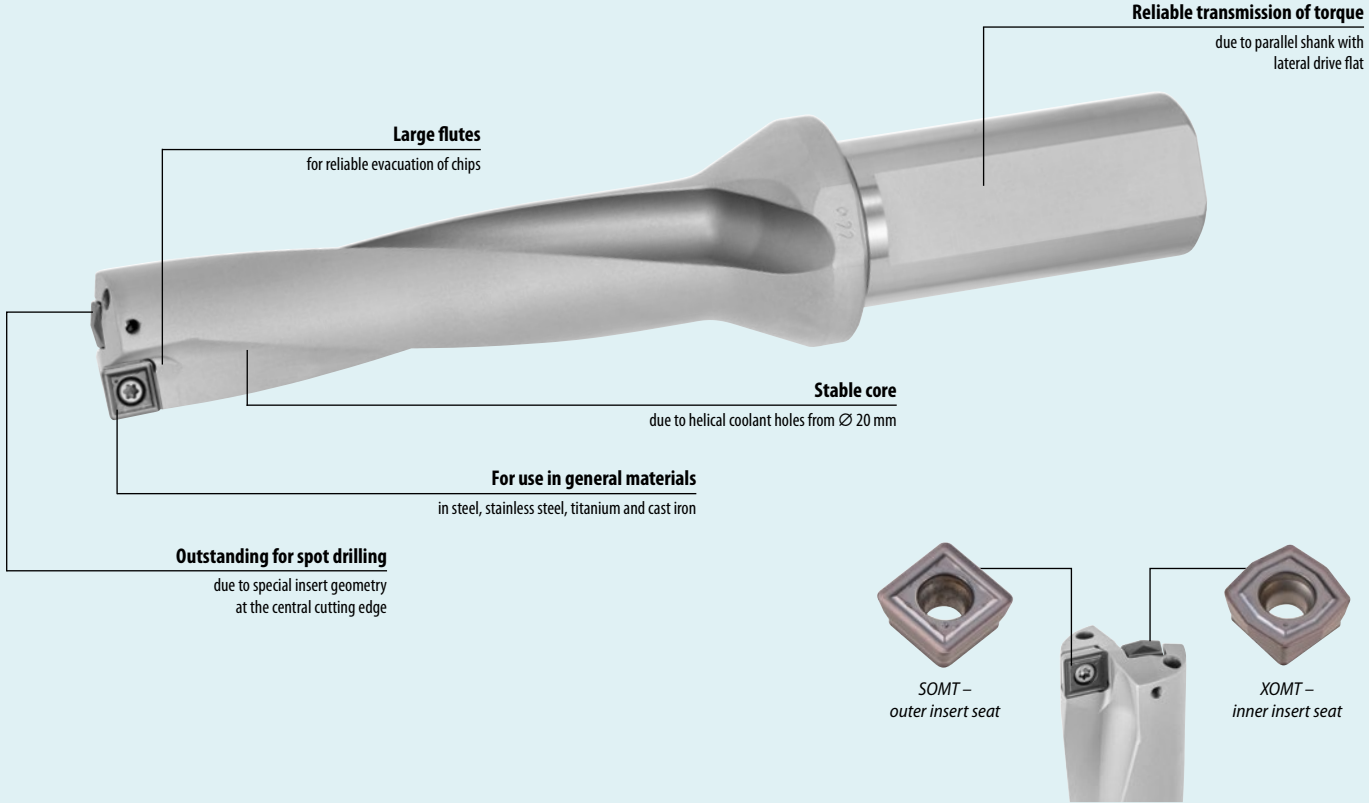
Recommendation:
23 5010 – When spot-drilling reduce the feed rate by 70 %.

23 5010

∅ D	22L 23 5000	22L 23 5005	22L 23 5010	for inch ∅	L_A			∅ D_s	L_s	ISO code indexable insert	Pack of insert screws
	HOLEX Pro Drill indexable drill										
	Combination shank										
mm	2×D	3×D	4×D	inch	23 5000 mm	23 5005 mm	23 5010 mm	mm	mm		
14	XXX	XXX	XXX	–	46	60	74	20	50	SOMT05T204 / XOMT05T204	232980 1 (TX6;0.4Nm)
15	XXX	XXX	XXX	19/32	49	64	79	20	50	SOMT05T204 / XOMT05T204	232980 1 (TX6;0.4Nm)
16	XXX	XXX	XXX	–	51	67	83	20	50	SOMT05T204 / XOMT05T204	232980 1 (TX6;0.4Nm)
17	XXX	XXX	XXX	–	53	70	87	25	56	SOMT06T205 / XOMT06T204	232980 2 (TX7;0.8Nm)
17,5	–	XXX	XXX	11/16	–	70	87	25	56	SOMT06T205 / XOMT06T204	232980 2 (TX7;0.8Nm)
18	XXX	XXX	XXX	–	56	74	92	25	56	SOMT06T205 / XOMT06T204	232980 2 (TX7;0.8Nm)
18,5	XXX	XXX	XXX	–	56	74	92	25	56	SOMT06T205 / XOMT06T204	232980 2 (TX7;0.8Nm)
19	XXX	XXX	XXX	3/4	58	77	96	25	56	SOMT06T205 / XOMT06T204	232980 2 (TX7;0.8Nm)
19,5	–	XXX	XXX	–	–	77	96	25	56	SOMT06T205 / XOMT06T204	232980 2 (TX7;0.8Nm)
20	XXX	XXX	XXX	–	62	82	102	25	56	SOMT070308 / XOMT070305	232980 3 (TX7; 0.8Nm)
21	XXX	XXX	XXX	–	64	85	106	25	56	SOMT070308 / XOMT070305	232980 3 (TX7; 0.8Nm)
22	XXX	XXX	XXX	–	66	88	110	25	56	SOMT070308 / XOMT070305	232980 3 (TX7; 0.8Nm)
22,5	–	XXX	XXX	–	–	88	110	25	56	SOMT070308 / XOMT070305	232980 3 (TX7; 0.8Nm)
23	XXX	XXX	XXX	–	70	93	116	25	56	SOMT070308 / XOMT070305	232980 3 (TX7; 0.8Nm)
24	XXX	XXX	XXX	–	73	97	121	32	60	SOMT093608 / XOMT093605	232980 4 (TX9;1.2Nm)
24,5	XXX	XXX	XXX	–	73	97	121	32	60	SOMT093608 / XOMT093605	232980 4 (TX9;1.2Nm)
25	XXX	XXX	XXX	–	75	100	125	32	60	SOMT093608 / XOMT093605	232980 4 (TX9;1.2Nm)
26	XXX	XXX	XXX	–	77	103	129	32	60	SOMT093608 / XOMT093605	232980 4 (TX9;1.2Nm)
26,5	XXX	XXX	XXX	–	77	103	129	32	60	SOMT093608 / XOMT093605	232980 4 (TX9;1.2Nm)
27	XXX	XXX	XXX	11/16	80	107	134	32	60	SOMT093608 / XOMT093605	232980 4 (TX9;1.2Nm)
28	XXX	XXX	XXX	–	83	111	139	32	60	SOMT093608 / XOMT093605	232980 4 (TX9;1.2Nm)
29	XXX	XXX	XXX	–	85	114	143	32	60	SOMT093608 / XOMT093605	232980 4 (TX9;1.2Nm)
29,5	–	XXX	XXX	–	–	114	143	32	60	SOMT093608 / XOMT093605	232980 4 (TX9;1.2Nm)
30	XXX	XXX	XXX	–	90	120	150	32	60	SOMT110408 / XOMT110406	232980 5 (TX15;3Nm)
31	XXX	XXX	XXX	1 7/32	92	123	154	32	60	SOMT110408 / XOMT110406	232980 5 (TX15;3Nm)
32	XXX	XXX	XXX	–	94	126	158	32	60	SOMT110408 / XOMT110406	232980 5 (TX15;3Nm)
33	XXX	XXX	XXX	–	97	130	163	32	60	SOMT110408 / XOMT110406	232980 5 (TX15;3Nm)
34	XXX	XXX	XXX	–	99	133	167	32	60	SOMT110408 / XOMT110406	232980 5 (TX15;3Nm)
35	XXX	XXX	XXX	1 3/8	101	136	171	32	60	SOMT110408 / XOMT110406	232980 5 (TX15;3Nm)
36	XXX	XXX	XXX	–	106	142	178	40	70	SOMT13M510 / XOMT13M506	232980 6 (TX15;3Nm)
37	XXX	XXX	XXX	–	108	145	182	40	70	SOMT13M510 / XOMT13M506	232980 6 (TX15;3Nm)
38	XXX	XXX	XXX	1 1/2	111	149	187	40	70	SOMT13M510 / XOMT13M506	232980 6 (TX15;3Nm)
39	XXX	XXX	XXX	–	113	152	191	40	70	SOMT13M510 / XOMT13M506	232980 6 (TX15;3Nm)
39,5	–	XXX	XXX	–	–	152	191	40	70	SOMT13M510 / XOMT13M506	232980 6 (TX15;3Nm)
40	XXX	XXX	XXX	–	116	156	196	40	70	SOMT13M510 / XOMT13M506	232980 6 (TX15;3Nm)

HOLEX Pro Drill– Indexable drill

Robust. Reliable. Economical.



HOLEX Pro Drill inserts SOMT.... / XOMT..... for indexable drills

The central cutting edge centres the drill quickly and reliably. The outer cutting edge offers outstanding chip clearance.

Suitable for: HOLEX Pro Drill No. 235000 – 235010.

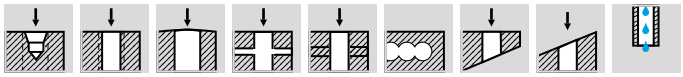
Application: SOMT inserts exclusively as the outer cutting edge.
XOMT inserts exclusively as the centre cutting edge.

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	CuZn	Uni
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	M	M	S	K	N	
23 5030–23 5082				160	150	140	120	100					110	90	50	130	220	●

SOMT – as the outer cutting edge.

SOMT – as the inner cutting edge.

Type			UNI		< 900 N f
22K 23 5030	SOMT05T204	HBD30	XXX	10	0.05 – 0.1
22K 23 5032	XOMT05T204	HBD30	XXX	10	0.05 – 0.1
22K 23 5040	SOMT06T205	HBD30	XXX	10	0.06 – 0.12
22K 23 5042	XOMT06T204	HBD30	XXX	10	0.06 – 0.12
22K 23 5050	SOMT070308	HBD30	XXX	10	0.06 – 0.12
22K 23 5052	XOMT070305	HBD30	XXX	10	0.06 – 0.12
22K 23 5060	SOGX 050204	HBD30	XXX	10	0.06 – 0.14
22K 23 5062	XOMT093605	HBD30	XXX	10	0.06 – 0.14
22K 23 5070	SOGX 050204	HBD30	XXX	10	0.06 – 0.16
22K 23 5072	XOMT110406	HBD30	XXX	10	0.06 – 0.16
22K 23 5080	SOMT13M510	HBD30	XXX	10	0.06 – 0.16
22K 23 5082	XOMT13M506	HBD30	XXX	10	0.06 – 0.16



KOMET® KUB Quatron® indexable drill, right-hand cutting

23 5505 – **With ABS® shank**.
23 5500/5502 – **With combination shank.**

- Optimised coolant channels for reliable chip evacuation.
- Point angle 174° for almost flat-bottomed holes.

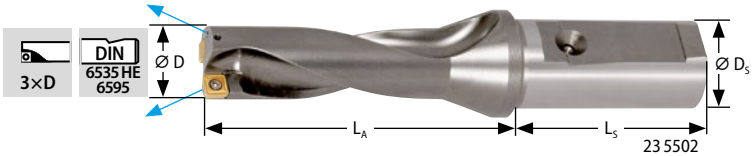
Application: With indexable inserts No. 236520 – 236576.
23 5500/5502 –

- For stationary and rotating use.
- For difficult drilling conditions (rolling scale, sloping surfaces of castings, interrupted cutting).
- For bores with tolerance ± 0.2 mm.

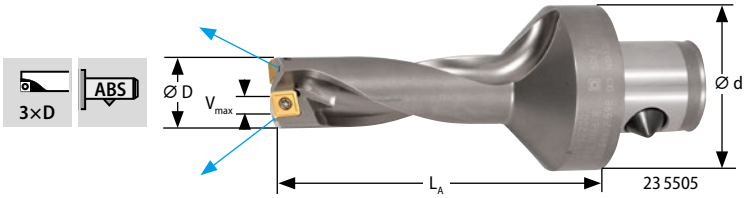
Supplied with:
23 5500/5502 – Clamp screws (without indexable inserts).

Note: Further sizes available on request.
23 5505 – For use only under **stable** machining conditions.
Offset-axis drilling is possible up to V_{max} = 0.25 mm, e.g. with eccentric adjusting unit No. 239010 – 239012.
Maximum Ø = D+0.5 mm achievable by offsetting.

23 5500



23 5502



23 5505

Ø D	24P 23 5500	24P 23 5502	24P 23 5505	for inch Ø	L_A			Ø D_s	L_s	ABS® Ø d	ISO code indexable insert	Pack of insert screws
	KOMET KUB Quatron® indexable drill				23 5500	23 5502	23 5505	23 5500 23 5502	23 5500 23 5502	23 5505		
	Combination shank	Combination shank	ABS® shank									
mm	2×D	3×D	3×D	inch	mm	mm	mm	mm	mm	mm		
14	XXX	XXX	XXX	–	52	66	77	20	50	50	SOEX 050204 13-..	239652_6IP1 (0.6 Nm)
15	XXX	XXX	(XXX)	19/32	54	69	80	20	50	50	SOEX 050204 13-..	239652_6IP1 (0.6 Nm)
15,5	XXX	XXX	(XXX)	–	56	72	83	20	50	50	SOEX 050204 13-..	239652_6IP1 (0.6 Nm)
16	XXX	XXX	XXX	–	56	72	83	20	50	50	SOEX 050204 13-..	239652_6IP1 (0.6 Nm)
16,5	–	XXX	–	–	–	75	–	20	50	–	SOEX 050204 13-..	239652_6IP1 (0.6 Nm)
17	XXX	XXX	(XXX)	–	58	75	86	20	50	50	SOEX 050204 13-..	239652_6IP1 (0.6 Nm)
17,5	XXX	XXX	XXX	11/16	60	78	89	25	56	50	SOEX 050204 13-..	239652_6IP1 (0.6 Nm)
18	XXX	XXX	XXX	–	60	78	89	25	56	50	SOEX 060306 18-..	239652_6IP2 (1.0 Nm)
18,5	XXX	XXX	(XXX)	–	62	81	92	25	56	50	SOEX 060306 18-..	239652_6IP2 (1.0 Nm)
19	XXX	XXX	XXX	3/4	62	81	92	25	56	50	SOEX 060306 18-..	239652_6IP2 (1.0 Nm)
19,5	XXX	XXX	XXX	–	64	84	95	25	56	50	SOEX 060306 18-..	239652_6IP2 (1.0 Nm)
20	XXX	XXX	XXX	–	64	84	95	25	56	50	SOEX 060306 18-..	239652_6IP2 (1.0 Nm)
20,5	XXX	XXX	(XXX)	–	66	87	98	25	56	50	SOEX 060306 18-..	239652_6IP2 (1.0 Nm)
21	XXX	XXX	XXX	–	66	87	98	25	56	50	SOEX 060306 18-..	239652_6IP2 (1.0 Nm)
22	XXX	XXX	(XXX)	–	68	90	101	25	56	50	SOEX 07T308 23-..	239652_8IP1 (1.3 Nm)
22,5	XXX	XXX	(XXX)	–	70	93	104	25	56	50	SOEX 07T308 23-..	239652_8IP1 (1.3 Nm)
23	XXX	XXX	(XXX)	29/32	70	93	104	25	56	50	SOEX 07T308 23-..	239652_8IP1 (1.3 Nm)
24	XXX	XXX	XXX	–	72	96	107	32	60	50	SOEX 07T308 23-..	239652_8IP1 (1.3 Nm)
24,5	XXX	XXX	(XXX)	–	74	99	110	32	60	50	SOEX 07T308 23-..	239652_8IP1 (1.3 Nm)
25	XXX	XXX	XXX	–	74	99	110	32	60	50	SOEX 07T308 23-..	239652_8IP1 (1.3 Nm)
26	XXX	XXX	XXX	–	76	102	113	32	60	50	SOEX 07T308 23-..	239652_8IP1 (1.3 Nm)
26,5	XXX	XXX	(XXX)	–	78	105	116	32	60	50	SOEX 07T308 23-..	239652_8IP1 (1.3 Nm)
27	XXX	XXX	(XXX)	1 1/16	78	105	116	32	60	50	SOEX 07T308 23-..	239652_8IP1 (1.3 Nm)
28	XXX	XXX	XXX	–	80	108	119	32	60	50	SOEX 090408 32-..	239652_15IP1 (2.8 Nm)
28,5	XXX	XXX	(XXX)	1 1/8	82	111	122	32	60	50	SOEX 090408 32-..	239652_15IP1 (2.8 Nm)
29	XXX	XXX	(XXX)	–	82	111	122	32	60	50	SOEX 090408 32-..	239652_15IP1 (2.8 Nm)
29,5	XXX	XXX	(XXX)	–	84	114	125	32	60	50	SOEX 090408 32-..	239652_15IP1 (2.8 Nm)
30	XXX	XXX	(XXX)	–	89	119	130	32	60	50	SOEX 090408 32-..	239652_15IP1 (2.8 Nm)
31	XXX	XXX	(XXX)	1 7/32	91	122	133	32	60	50	SOEX 090408 32-..	239652_15IP1 (2.8 Nm)
31,5	XXX	XXX	(XXX)	–	93	125	136	32	60	50	SOEX 090408 32-..	239652_15IP1 (2.8 Nm)
32	XXX	XXX	(XXX)	–	93	125	136	32	60	50	SOEX 090408 32-..	239652_15IP1 (2.8 Nm)
33	XXX	XXX	(XXX)	–	95	128	139	32	60	50	SOEX 090408 32-..	239652_15IP1 (2.8 Nm)
34	XXX	XXX	(XXX)	–	97	131	142	32	60	50	SOEX 120508 44-..	239652_20IP (6.3 Nm)
35	XXX	XXX	XXX	1 3/8	99	134	145	32	60	50	SOEX 120508 44-..	239652_20IP (6.3 Nm)
36	XXX	XXX	(XXX)	–	101	137	148	32	60	50	SOEX 120508 44-..	239652_20IP (6.3 Nm)
37	–	XXX	(XXX)	–	–	150	161	32	60	50	SOEX 120508 44-..	239652_20IP (6.3 Nm)
37,5	–	XXX	(XXX)	–	–	153	164	32	60	50	SOEX 120508 44-..	239652_20IP (6.3 Nm)
38	XXX	XXX	(XXX)	1 1/2	115	153	164	32	60	50	SOEX 120508 44-..	239652_20IP (6.3 Nm)
39	XXX	XXX	(XXX)	–	117	156	167	32	60	50	SOEX 120508 44-..	239652_20IP (6.3 Nm)
39,5	–	XXX	(XXX)	–	–	159	170	32	60	50	SOEX 120508 44-..	239652_20IP (6.3 Nm)

Ø D	24P 23 5500	24P 23 5502	24P 23 5505	for inch Ø	L_A			Ø D_s	L_s	ABS® Ø d	ISO code indexable insert	Pack of insert screws
	KOMET KUB Quatron® indexable drill				23 5500	23 5502	23 5505	23 5500 23 5502	23 5500 23 5502	23 5505		
	Combination shank	Combination shank	ABS® shank									
mm	2×D	3×D	3×D	inch	mm	mm	mm	mm	mm	mm		
40	XXX	XXX	XXX	–	119	159	170	32	60	50	SOEX 120508 44-..	239652_20IP (6.3 Nm)
41	–	–	(XXX)	–	–	–	173	–	–	50	SOEX 120508 44-..	239652_20IP (6.3 Nm)
42	–	XXX	(XXX)	1 21/32	–	165	176	32	60	50	SOEX 120508 44-..	239652_20IP (6.3 Nm)
43	–	XXX	(XXX)	–	–	168	179	32	60	50	SOEX 120508 44-..	239652_20IP (6.3 Nm)
44	XXX	XXX	(XXX)	–	127	171	182	32	60	50	SOEX 120508 44-..	239652_20IP (6.3 Nm)
45	–	–	(XXX)	–	–	–	190	–	–	63	SOEX 07T308 23-..	239652_8IP1 (1.3 Nm)
46	–	–	(XXX)	1 13/16	–	–	193	–	–	63	SOEX 07T308 23-..	239652_8IP1 (1.3 Nm)
47	–	–	(XXX)	–	–	–	196	–	–	63	SOEX 07T308 23-..	239652_8IP1 (1.3 Nm)
48	–	–	(XXX)	–	–	–	199	–	–	63	SOEX 07T308 23-..	239652_8IP1 (1.3 Nm)
49	–	–	XXX	–	–	–	202	–	–	63	SOEX 07T308 23-..	239652_8IP1 (1.3 Nm)
50	–	–	XXX	1 31/32	–	–	205	–	–	63	SOEX 07T308 23-..	239652_8IP1 (1.3 Nm)
51	–	–	(XXX)	–	–	–	208	–	–	63	SOEX 07T308 23-..	239652_8IP1 (1.3 Nm)
52	–	–	(XXX)	–	–	–	211	–	–	63	SOEX 07T308 23-..	239652_8IP1 (1.3 Nm)
53	–	–	(XXX)	–	–	–	213	–	–	63	SOEX 090408 32-..	239652_15IP1 (2.8 Nm)
54	–	–	(XXX)	2 1/8	–	–	217	–	–	63	SOEX 090408 32-..	239652_15IP1 (2.8 Nm)
55	–	–	(XXX)	–	–	–	220	–	–	80	SOEX 090408 32-..	239652_15IP1 (2.8 Nm)
56	–	–	(XXX)	–	–	–	223	–	–	80	SOEX 090408 32-..	239652_15IP1 (2.8 Nm)
57	–	–	(XXX)	–	–	–	226	–	–	80	SOEX 090408 32-..	239652_15IP1 (2.8 Nm)
58	–	–	(XXX)	2 9/32	–	–	229	–	–	80	SOEX 090408 32-..	239652_15IP1 (2.8 Nm)
59	–	–	(XXX)	–	–	–	232	–	–	80	SOEX 090408 32-..	239652_15IP1 (2.8 Nm)
60	–	–	(XXX)	–	–	–	235	–	–	80	SOEX 090408 32-..	239652_15IP1 (2.8 Nm)
61	–	–	(XXX)	–	–	–	238	–	–	80	SOEX 090408 32-..	239652_15IP1 (2.8 Nm)
62	–	–	(XXX)	2 7/16	–	–	241	–	–	80	SOEX 090408 32-..	239652_15IP1 (2.8 Nm)
63	–	–	(XXX)	–	–	–	244	–	–	80	SOEX 090408 32-..	239652_15IP1 (2.8 Nm)
64	–	–	(XXX)	–	–	–	247	–	–	80	SOEX 090408 32-..	239652_15IP1 (2.8 Nm)
65	–	–	(XXX)	2 9/16	–	–	250	–	–	80	SOEX 090408 32-..	239652_15IP1 (2.8 Nm)

KOMET® Indexable inserts SOEX.. Type W83 for KUB Quatron® / TwinKom® G01 / KUB Centron® Powerline

Ground on the circumference, with rounded cutting edge and sintered chip breaker.

Note: **Application values refer to the KUB Quatron® 235500 – 235505.**

23 6535 – When using the KUB Quatron® 235500 – 235505 please halve the feed rate values.

23 6537 Size 39-210 – **Only for KUB Centron Powerline.**

23 6553–6565 – **Do not use in the centre pocket of indexable drills!**

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	CuZn	Graphite GRP CRP	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	M	M	S	K	N	N						
23 6520	600	300	250	**300**	**250**	**200**	**160**	**130**				160	160	80	200			●		●			
23 6535–23 6537				**300**	**250**	**200**	**160**	**130**				160	160							●			
23 6541	600	300	250	**300**	**250**	**200**	160	130				160	160	**80**				●		●			
23 6553				300	250	200						**160**	**160**	**80**						●			
23 6554	**600**	**300**	**250**											80		**300**	150			●		○	
23 6560							160	130	60						**200**					●		○	
23 6565															**160**					●		○	
23 6573				**300**	**250**	**200**	**160**	**130**				160	160	80						●			
23 6576				**300**	**250**	**200**						**160**	160	**80**						●			

Designation type W83			13-000	13-010	13-030	13-130	13-210		Type
24Q 23 6520	KOMET® indexable insert	BK8425	–	XXX	–	–	–	10	Uni
24Q 23 6535		BK8430	–	–	XXX	–	–	10	ST1400
24Q 23 6537		BK8430	–	–	–	–	XXX	10	ST1400
24Q 23 6541		BK7935	–	XXX	–	–	–	10	ST900; Ti
24Q 23 6553		BK7935	–	–	–	–	XXX	10	Inox
24Q 23 6554		BK7710	–	–	–	–	(XXX)	10	Alu
24Q 23 6560		BK6115	XXX	–	–	–	–	10	GG(G)
24Q 23 6573		BK8425	–	–	–	XXX	–	10	ST1400
24Q 23 6576		BK7935	–	–	–	XXX	–	10	Inox
ISO code indexable insert			SOEX 050204						
Feed f in steel < 900 N/mm²		mm/rev.	0.12						

Designation type W83			18-000	18-010	18-030	18-130	18-210		Type
24Q 23 6520	KOMET® indexable insert	BK8425	–	XXX	–	–	–	10	Uni
24Q 23 6535		BK8430	–	–	XXX	–	–	10	ST1400
24Q 23 6537		BK8430	–	–	–	–	XXX	10	ST1400
24Q 23 6541		BK7935	–	XXX	–	–	–	10	ST900; Ti
24Q 23 6553		BK7935	–	–	–	–	XXX	10	Inox
24Q 23 6554		BK7710	–	–	–	–	(XXX)	10	Alu
24Q 23 6560		BK6115	XXX	–	–	–	–	10	GG(G)
24Q 23 6573		BK8425	–	–	–	XXX	–	10	ST1400
24Q 23 6576		BK7935	–	–	–	XXX	–	10	Inox
ISO code indexable insert			SOEX 060306						
Feed f in steel < 900 N/mm²		mm/rev.	0.16						

Designation type W83			23-000	23-010	23-030	23-130	23-210		Type
24Q 23 6520	KOMET® indexable insert	BK8425	–	XXX	–	–	–	10	Uni
24Q 23 6535		BK8430	–	–	XXX	–	–	10	ST1400
24Q 23 6537		BK8430	–	–	–	–	XXX	10	ST1400
24Q 23 6541		BK7935	–	XXX	–	–	–	10	ST900; Ti
24Q 23 6553		BK7935	–	–	–	–	XXX	10	Inox
24Q 23 6554		BK7710	–	–	–	–	(XXX)	10	Alu
24Q 23 6560		BK6115	XXX	–	–	–	–	10	GG(G)
24Q 23 6573		BK8425	–	–	–	XXX	–	10	ST1400
24Q 23 6576		BK7935	–	–	–	XXX	–	10	Inox
ISO code indexable insert			SOEX 07T308						
Feed f in steel < 900 N/mm²		mm/rev.	0.16						

Designation type W83			32-000	32-010	32-030	32-130	32-210		Type
24Q 23 6520	KOMET® indexable insert	BK8425	–	XXX	–	–	–	10	Uni
24Q 23 6535		BK8430	–	–	XXX	–	–	10	ST1400
24Q 23 6537		BK8430	–	–	–	–	XXX	10	ST1400
24Q 23 6541		BK7935	–	XXX	–	–	–	10	ST900; Ti
24Q 23 6553		BK7935	–	–	–	–	XXX	10	Inox
24Q 23 6554		BK7710	–	–	–	–	(XXX)	10	Alu
24Q 23 6560		BK6115	XXX	–	–	–	–	10	GG(G)
24Q 23 6573		BK8425	–	–	–	XXX	–	10	ST1400
24Q 23 6576		BK7935	–	–	–	XXX	–	10	Inox
ISO code indexable insert			SOEX 090408						
Feed f in steel < 900 N/mm²		mm/rev.	0.2						

Designation type W83			39-210		Type
24Q 23 6537	KOMET® indexable insert	BK8430	XXX	10	ST1400
24Q 23 6553		BK7935	XXX	10	Inox
24Q 23 6554		BK7710	(XXX)	10	Alu
24Q 23 6565		BK6130	XXX	10	GG(G)
ISO code indexable insert			SOEX 110508		
Feed f in steel < 900 N/mm²		mm/rev.	0.22		

Designation type W83			44-000	44-010	44-030	44-130	44-210		Type
24Q 23 6520	KOMET® indexable insert	BK8425	–	XXX	–	–	–	10	Uni
24Q 23 6535		BK8430	–	–	XXX	–	–	10	ST1400
24Q 23 6537		BK8430	–	–	–	–	XXX	10	ST1400
24Q 23 6541		BK7935	–	XXX	–	–	–	10	ST900; Ti
24Q 23 6553		BK7935	–	–	–	–	XXX	10	Inox
24Q 23 6554		BK7710	–	–	–	–	(XXX)	10	Alu
24Q 23 6560		BK6115	XXX	–	–	–	–	10	GG(G)
24Q 23 6573		BK8425	–	–	–	XXX	–	10	ST1400
24Q 23 6576		BK7935	–	–	–	XXX	–	10	Inox
ISO code indexable insert			SOEX 120508						
Feed f in steel < 900 N/mm²		mm/rev.	0.25						

ISO 9766 | HPC | 2×D | 3×D | 4×D | 5×D

KOMET® HPC indexable drill KUB Pentron® right-hand cutting, plain shank with drive flats

- **Very high performance** and long tool life thanks to optimised base body strength and special surface treatment.
- Best dimensional accuracy even under **very difficult drilling conditions.**
- Stock costs reduced because internal and external inserts are identical.

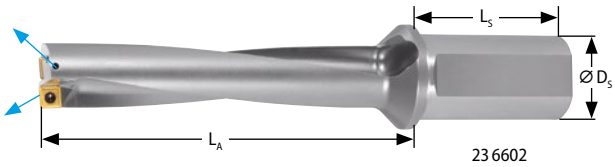
23 6601 – **Bore tolerance:** ØD – 0.1 / + 0.3
23 6602 – **Bore tolerance:** ØD – 0.1 / + 0.35
23 6614/6615 – **Bore tolerance:** ØD – 0.1 / + 0.2

Application: ■ **Under extreme machining conditions.**
With indexable inserts No. 236605 – 236610.

Supplied with: Clamp screws (without indexable inserts).

Recommendation:
23 6602 – **When spot-drilling** reduce the feed rate by 70 %.

Note: Version 2×D and 3×D with ABS® also available on request in imperial sizes.
Version with PSC shank available on request.



23 6602

Ø D	24P 23 6614	24P 23 6615	24P 23 6601	24P 23 6602	for inch Ø	L_A				Ø D_S	L_S	ISO code indexable insert	Pack of insert screws
	KUB Pentron® indexable drill												
	Plain shank					23 6614	23 6615	23 6601	23 6602				
mm	2×D	3×D	4×D	5×D	inch	mm	mm	mm	mm	mm	mm		
14	XXX	XXX	XXX	XXX	–	41	55	69	83	20	50	SOGX 040204 10-...	239652_5IP1 (0.38 Nm)
14,3	(XXX)	(XXX)	–	–	–	44	59	–	–	20	50	SOGX 040204 10-...	239652_5IP1 (0.38 Nm)
14,5	XXX	XXX	(XXX)	(XXX)	–	44	59	74	89	20	50	SOGX 040204 10-...	239652_5IP1 (0.38 Nm)
15	XXX	XXX	XXX	XXX	19/32	44	59	74	89	20	50	SOGX 040204 10-...	239652_5IP1 (0.38 Nm)
15,1	(XXX)	(XXX)	–	–	–	48	64	–	–	20	50	SOGX 040204 10-...	239652_5IP1 (0.38 Nm)
15,5	XXX	XXX	(XXX)	(XXX)	–	48	64	80	96	20	50	SOGX 040204 10-...	239652_5IP1 (0.38 Nm)
15,9	(XXX)	(XXX)	–	–	–	48	64	–	–	20	50	SOGX 040204 10-...	239652_5IP1 (0.38 Nm)
16	XXX	XXX	XXX	XXX	–	48	64	80	96	20	50	SOGX 040204 10-...	239652_5IP1 (0.38 Nm)
16,5	XXX	XXX	XXX	XXX	–	51	68	85	102	20	50	SOGX 050204 12-...	239652_6IP1 (0.6 Nm)
16,7	(XXX)	(XXX)	–	–	–	51	68	–	–	20	50	SOGX 050204 12-...	239652_6IP1 (0.6 Nm)
17	XXX	XXX	XXX	XXX	–	51	68	85	102	20	50	SOGX 050204 12-...	239652_6IP1 (0.6 Nm)
17,5	XXX	XXX	XXX	XXX	11/16	53	71	89	107	25	56	SOGX 050204 12-...	239652_6IP1 (0.6 Nm)
17,9	(XXX)	(XXX)	–	–	–	53	71	–	–	25	56	SOGX 050204 12-...	239652_6IP1 (0.6 Nm)
18	XXX	XXX	XXX	XXX	–	53	71	89	107	25	56	SOGX 050204 12-...	239652_6IP1 (0.6 Nm)
18,5	XXX	XXX	XXX	XXX	–	56	75	94	113	25	56	SOGX 060206 18-...	239652_6IP2 (1.0 Nm)
19	XXX	XXX	XXX	XXX	3/4	56	75	94	113	25	56	SOGX 060206 18-...	239652_6IP2 (1.0 Nm)
19,1	(XXX)	(XXX)	–	–	–	58	78	–	–	25	56	SOGX 060206 18-...	239652_6IP2 (1.0 Nm)
19,4	(XXX)	(XXX)	–	–	–	58	78	–	–	25	56	SOGX 060206 18-...	239652_6IP2 (1.0 Nm)
19,5	XXX	XXX	XXX	XXX	–	58	78	98	118	25	56	SOGX 060206 18-...	239652_6IP2 (1.0 Nm)
19,8	(XXX)	(XXX)	–	–	–	58	78	–	–	25	56	SOGX 060206 18-...	239652_6IP2 (1.0 Nm)
20	XXX	XXX	XXX	XXX	–	58	78	98	118	25	56	SOGX 060206 18-...	239652_6IP2 (1.0 Nm)
20,5	XXX	XXX	XXX	XXX	–	61	82	103	124	25	56	SOGX 07T208 20-...	239652_6IP2 (1.0 Nm)
21	XXX	XXX	XXX	XXX	–	63	82	103	124	25	56	SOGX 07T208 20-...	239652_6IP2 (1.0 Nm)
21,5	XXX	XXX	XXX	XXX	27/32	63	85	107	129	25	56	SOGX 07T208 20-...	239652_6IP2 (1.0 Nm)
21,6	(XXX)	(XXX)	–	–	–	63	85	–	–	25	56	SOGX 07T208 20-...	239652_6IP2 (1.0 Nm)
22	XXX	XXX	XXX	XXX	–	63	85	107	129	25	56	SOGX 07T208 20-...	239652_6IP2 (1.0 Nm)
22,2	(XXX)	(XXX)	–	–	–	66	89	–	–	25	56	SOGX 07T208 20-...	239652_6IP2 (1.0 Nm)
22,5	XXX	XXX	XXX	XXX	–	66	89	112	135	25	56	SOGX 07T208 20-...	239652_6IP2 (1.0 Nm)
23	XXX	XXX	XXX	XXX	29/32	66	89	112	135	25	56	SOGX 07T208 20-...	239652_6IP2 (1.0 Nm)
23,5	XXX	XXX	XXX	XXX	–	68	92	116	140	32	60	SOGX 080308 24-...	239652_8IP1 (1.3 Nm)
23,8	(XXX)	(XXX)	–	–	–	68	92	–	–	32	60	SOGX 080308 24-...	239652_8IP1 (1.3 Nm)
24	XXX	XXX	XXX	XXX	–	68	92	116	140	32	60	SOGX 080308 24-...	239652_8IP1 (1.3 Nm)
24,5	XXX	XXX	XXX	XXX	–	71	96	121	146	32	60	SOGX 080308 24-...	239652_8IP1 (1.3 Nm)

Ø D	24P 23 6614	24P 23 6615	24P 23 6601	24P 23 6602	for inch Ø	L_A				Ø D_s	L_s	ISO code indexable insert	Pack of insert screws
	KUB Pentron® indexable drill					23 6614	23 6615	23 6601	23 6602				
	Plain shank												
mm	2×D	3×D	4×D	5×D	inch	mm	mm	mm	mm	mm	mm		
25	XXX	XXX	XXX	XXX	–	71	96	121	146	32	60	SOGX 080308 24-...	239652_8IP1 (1.3 Nm)
25,4	(XXX)	(XXX)	–	–	–	73	99	–	–	32	60	SOGX 080308 24-...	239652_8IP1 (1.3 Nm)
25,5	XXX	XXX	XXX	XXX	1	73	99	125	151	32	60	SOGX 080308 24-...	239652_8IP1 (1.3 Nm)
26	XXX	XXX	XXX	XXX	–	73	99	125	151	32	60	SOGX 080308 24-...	239652_8IP1 (1.3 Nm)
26,2	(XXX)	(XXX)	–	–	–	76	103	–	–	32	60	SOGX 09T308 28-...	239652_8IP6 (2.2 Nm)
26,5	XXX	XXX	(XXX)	XXX	–	76	103	130	157	32	60	SOGX 09T308 28-...	239652_8IP6 (2.2 Nm)
27	XXX	XXX	(XXX)	XXX	1 1/16	76	103	130	157	32	60	SOGX 09T308 28-...	239652_8IP6 (2.2 Nm)
27,5	XXX	XXX	(XXX)	(XXX)	–	78	106	134	162	32	60	SOGX 09T308 28-...	239652_8IP6 (2.2 Nm)
28	XXX	XXX	(XXX)	XXX	–	78	106	134	162	32	60	SOGX 09T308 28-...	239652_8IP6 (2.2 Nm)
28,2	(XXX)	(XXX)	–	–	–	81	110	–	–	32	60	SOGX 09T308 28-...	239652_8IP6 (2.2 Nm)
28,5	XXX	XXX	(XXX)	(XXX)	1 1/8	81	110	139	168	32	60	SOGX 09T308 28-...	239652_8IP6 (2.2 Nm)
28,6	(XXX)	(XXX)	–	–	–	81	110	–	–	32	60	SOGX 09T308 28-...	239652_8IP6 (2.2 Nm)
29	XXX	XXX	XXX	XXX	–	81	110	139	168	32	60	SOGX 09T308 28-...	239652_8IP6 (2.2 Nm)
29,4	(XXX)	(XXX)	–	–	–	83	113	–	–	32	60	SOGX 09T308 28-...	239652_8IP6 (2.2 Nm)
29,5	XXX	XXX	(XXX)	(XXX)	–	83	113	143	173	32	60	SOGX 09T308 28-...	239652_8IP6 (2.2 Nm)
30	XXX	XXX	XXX	XXX	–	83	113	143	173	32	60	SOGX 09T308 28-...	239652_8IP6 (2.2 Nm)
30,2	(XXX)	(XXX)	–	–	–	86	117	–	–	40	68	SOGX 100408 32-...	239652_15IP1 (2.8 Nm)
30,5	XXX	XXX	XXX	XXX	–	86	117	148	179	40	68	SOGX 100408 32-...	239652_15IP1 (2.8 Nm)
30,9	(XXX)	(XXX)	–	–	–	86	117	–	–	40	68	SOGX 100408 32-...	239652_15IP1 (2.8 Nm)
31	XXX	XXX	(XXX)	XXX	1 7/32	86	117	148	179	40	68	SOGX 100408 32-...	239652_15IP1 (2.8 Nm)
31,5	XXX	XXX	(XXX)	(XXX)	–	88	120	152	184	40	68	SOGX 100408 32-...	239652_15IP1 (2.8 Nm)
31,8	(XXX)	(XXX)	–	–	–	88	120	–	–	40	68	SOGX 100408 32-...	239652_15IP1 (2.8 Nm)
32	XXX	XXX	XXX	XXX	–	88	120	152	184	40	68	SOGX 100408 32-...	239652_15IP1 (2.8 Nm)
32,5	XXX	XXX	XXX	XXX	1 9/32	91	124	157	190	40	68	SOGX 100408 32-...	239652_15IP1 (2.8 Nm)
33	XXX	XXX	XXX	XXX	–	91	124	157	190	40	68	SOGX 100408 32-...	239652_15IP1 (2.8 Nm)
33,2	XXX	XXX	XXX	XXX	–	93	127	161	195	40	68	SOGX 110408 38-...	239652_15IP1 (2.8 Nm)
33,3	(XXX)	(XXX)	–	–	–	93	127	–	–	40	68	SOGX 110408 38-...	239652_15IP1 (2.8 Nm)
33,5	XXX	XXX	XXX	XXX	–	93	127	161	195	40	68	SOGX 110408 38-...	239652_15IP1 (2.8 Nm)
33,7	(XXX)	(XXX)	–	–	–	93	127	–	–	40	68	SOGX 110408 38-...	239652_15IP1 (2.8 Nm)
34	XXX	XXX	(XXX)	XXX	–	93	127	161	195	40	68	SOGX 110408 38-...	239652_15IP1 (2.8 Nm)
34,5	XXX	XXX	XXX	XXX	–	96	131	166	201	40	68	SOGX 110408 38-...	239652_15IP1 (2.8 Nm)
34,9	(XXX)	(XXX)	–	–	–	96	131	–	–	40	68	SOGX 110408 38-...	239652_15IP1 (2.8 Nm)
35	XXX	XXX	(XXX)	XXX	1 3/8	96	131	166	201	40	68	SOGX 110408 38-...	239652_15IP1 (2.8 Nm)
35,5	XXX	XXX	XXX	XXX	–	98	134	170	206	40	68	SOGX 110408 38-...	239652_15IP1 (2.8 Nm)
36	XXX	XXX	(XXX)	XXX	–	98	134	170	206	40	68	SOGX 110408 38-...	239652_15IP1 (2.8 Nm)
36,5	XXX	XXX	XXX	XXX	1 7/16	101	138	175	212	40	68	SOGX 110408 38-...	239652_15IP1 (2.8 Nm)
37	XXX	XXX	(XXX)	XXX	–	101	138	175	212	40	68	SOGX 110408 38-...	239652_15IP1 (2.8 Nm)
37,3	(XXX)	(XXX)	–	–	–	103	141	–	–	40	68	SOGX 120408 42-...	239652_20IP (6.3 Nm)
37,5	XXX	XXX	(XXX)	(XXX)	–	103	141	179	217	40	68	SOGX 120408 42-...	239652_20IP (6.3 Nm)
38	XXX	XXX	(XXX)	XXX	1 1/2	103	141	179	217	40	68	SOGX 120408 42-...	239652_20IP (6.3 Nm)
38,1	(XXX)	(XXX)	–	–	–	106	145	–	–	40	68	SOGX 120408 42-...	239652_20IP (6.3 Nm)
38,5	XXX	XXX	XXX	XXX	–	106	145	184	223	40	68	SOGX 120408 42-...	239652_20IP (6.3 Nm)
39	XXX	XXX	XXX	XXX	–	106	145	184	223	40	68	SOGX 120408 42-...	239652_20IP (6.3 Nm)
39,2	(XXX)	XXX	XXX	XXX	–	108	148	188	228	40	68	SOGX 120408 42-...	239652_20IP (6.3 Nm)
39,5	XXX	XXX	(XXX)	(XXX)	–	108	148	188	228	40	68	SOGX 120408 42-...	239652_20IP (6.3 Nm)
39,7	(XXX)	(XXX)	–	–	–	108	148	–	–	40	68	SOGX 120408 42-...	239652_20IP (6.3 Nm)
40	XXX	XXX	(XXX)	XXX	–	108	148	188	228	40	68	SOGX 120408 42-...	239652_20IP (6.3 Nm)
40,5	XXX	XXX	XXX	XXX	1 19/32	111	152	193	234	40	68	SOGX 120408 42-...	239652_20IP (6.3 Nm)
41	XXX	XXX	(XXX)	(XXX)	–	111	152	193	234	40	68	SOGX 120408 42-...	239652_20IP (6.3 Nm)
41,3	(XXX)	(XXX)	–	–	–	113	155	–	–	40	68	SOGX 120408 42-...	239652_20IP (6.3 Nm)
41,5	XXX	XXX	XXX	XXX	–	113	155	197	239	40	68	SOGX 120408 42-...	239652_20IP (6.3 Nm)
42	XXX	XXX	(XXX)	XXX	1 21/32	113	155	197	239	40	68	SOGX 120408 42-...	239652_20IP (6.3 Nm)
42,1	(XXX)	(XXX)	–	–	–	116	159	–	–	40	68	SOGX 130508 46-...	239652_20IP (6.3 Nm)
42,5	XXX	XXX	XXX	XXX	–	116	159	202	245	40	68	SOGX 130508 46-...	239652_20IP (6.3 Nm)
42,9	(XXX)	(XXX)	–	–	–	116	159	–	–	40	68	SOGX 130508 46-...	239652_20IP (6.3 Nm)
43	XXX	XXX	(XXX)	XXX	–	116	159	202	245	40	68	SOGX 130508 46-...	239652_20IP (6.3 Nm)
43,5	XXX	XXX	XXX	XXX	–	118	162	206	250	40	68	SOGX 130508 46-...	239652_20IP (6.3 Nm)
44	XXX	XXX	(XXX)	XXX	–	118	162	206	250	40	68	SOGX 130508 46-...	239652_20IP (6.3 Nm)
44,5	XXX	XXX	(XXX)	(XXX)	1 3/4	121	166	211	256	40	68	SOGX 130508 46-...	239652_20IP (6.3 Nm)
45	XXX	XXX	(XXX)	XXX	–	121	166	211	256	40	68	SOGX 130508 46-...	239652_20IP (6.3 Nm)
45,5	XXX	XXX	(XXX)	(XXX)	–	123	169	215	261	40	68	SOGX 130508 46-...	239652_20IP (6.3 Nm)
46	XXX	XXX	(XXX)	(XXX)	1 13/16	123	169	215	261	40	68	SOGX 130508 46-...	239652_20IP (6.3 Nm)

ABS | HPC

KOMET® KUB Pentron® indexable drill right-hand cutting, with ABS® shank

23 6603 – **Bore tolerance:** D – 0.1 / + 0.3

23 6604 – **Bore tolerance:** D – 0.1 / + 0.35

Application: With indexable inserts No. 236605 – 236610.

Recommendation:

23 6604 – **When spot-drilling** reduce the feed rate by 70 %.

Note:

- For use only under **stable** machining conditions.
- **Offset-axis drilling is possible up to V_{max} = 0.25 mm,** e.g. with eccentric adjusting unit No. 239010 to 239012.
- Maximum Ø = D + 0.5 mm achievable by offsetting.
- Version with PSC shank available on request.

23 6603

23 6604

Ø D	24P 23 6603	24P 23 6604	for inch Ø	L_A		ABS® Ø d	ISO code indexable insert	Pack of insert screws
	KUB Pentron® indexable drill ABS® shank			23 6603	23 6604			
mm	4×D	5×D	inch	mm	mm	mm		
14	(XXX)	(XXX)	–	83	97	50	SOGX 040204 10-...	239652_5IP1 (0.38 Nm)
14,5	(XXX)	(XXX)	–	88	103	50	SOGX 040204 10-...	239652_5IP1 (0.38 Nm)
15	(XXX)	(XXX)	19/32	88	103	50	SOGX 040204 10-...	239652_5IP1 (0.38 Nm)
15,5	(XXX)	(XXX)	–	94	110	50	SOGX 040204 10-...	239652_5IP1 (0.38 Nm)
16	(XXX)	(XXX)	–	94	110	50	SOGX 040204 10-...	239652_5IP1 (0.38 Nm)
16,5	(XXX)	(XXX)	–	99	116	50	SOGX 050204 12-...	239652_6IP1 (0.6 Nm)
17	(XXX)	(XXX)	–	99	116	50	SOGX 050204 12-...	239652_6IP1 (0.6 Nm)
17,5	(XXX)	XXX	11/16	103	121	50	SOGX 050204 12-...	239652_6IP1 (0.6 Nm)
18	(XXX)	(XXX)	–	103	121	50	SOGX 050204 12-...	239652_6IP1 (0.6 Nm)
18,5	(XXX)	(XXX)	–	108	127	50	SOGX 060206 18-...	239652_6IP2 (1.0 Nm)
19	(XXX)	(XXX)	3/4	108	127	50	SOGX 060206 18-...	239652_6IP2 (1.0 Nm)
19,5	(XXX)	(XXX)	–	112	132	50	SOGX 060206 18-...	239652_6IP2 (1.0 Nm)
20	(XXX)	(XXX)	–	112	132	50	SOGX 060206 18-...	239652_6IP2 (1.0 Nm)
20,5	(XXX)	(XXX)	–	116	137	50	SOGX 07T208 20-...	239652_6IP2 (1.0 Nm)
21	(XXX)	XXX	–	116	137	50	SOGX 07T208 20-...	239652_6IP2 (1.0 Nm)
21,5	XXX	(XXX)	27/32	120	142	50	SOGX 07T208 20-...	239652_6IP2 (1.0 Nm)
22	(XXX)	XXX	–	120	142	50	SOGX 07T208 20-...	239652_6IP2 (1.0 Nm)
22,5	(XXX)	(XXX)	–	124	147	50	SOGX 07T208 20-...	239652_6IP2 (1.0 Nm)
23	(XXX)	(XXX)	29/32	124	147	50	SOGX 07T208 20-...	239652_6IP2 (1.0 Nm)
23,5	(XXX)	(XXX)	–	128	152	50	SOGX 080308 24-...	239652_8IP1 (1.3 Nm)
24	(XXX)	(XXX)	–	128	152	50	SOGX 080308 24-...	239652_8IP1 (1.3 Nm)
24,5	(XXX)	(XXX)	–	133	158	50	SOGX 080308 24-...	239652_8IP1 (1.3 Nm)
25	(XXX)	(XXX)	–	133	158	50	SOGX 080308 24-...	239652_8IP1 (1.3 Nm)
25,5	(XXX)	(XXX)	1	137	163	50	SOGX 080308 24-...	239652_8IP1 (1.3 Nm)
26	(XXX)	XXX	–	137	163	50	SOGX 080308 24-...	239652_8IP1 (1.3 Nm)
26,5	(XXX)	(XXX)	–	142	169	50	SOGX 09T308 28-...	239652_8IP6 (2.2 Nm)
27	(XXX)	(XXX)	1 1/16	142	169	50	SOGX 09T308 28-...	239652_8IP6 (2.2 Nm)
27,5	(XXX)	(XXX)	–	146	174	50	SOGX 09T308 28-...	239652_8IP6 (2.2 Nm)
28	(XXX)	(XXX)	–	146	174	50	SOGX 09T308 28-...	239652_8IP6 (2.2 Nm)
28,5	(XXX)	(XXX)	1 1/8	151	180	50	SOGX 09T308 28-...	239652_8IP6 (2.2 Nm)
29	(XXX)	XXX	–	151	180	50	SOGX 09T308 28-...	239652_8IP6 (2.2 Nm)
29,5	(XXX)	(XXX)	–	155	185	50	SOGX 09T308 28-...	239652_8IP6 (2.2 Nm)
30	(XXX)	(XXX)	–	155	185	50	SOGX 09T308 28-...	239652_8IP6 (2.2 Nm)
30,5	(XXX)	(XXX)	–	163	194	63	SOGX 100408 32-...	239652_15IP1 (2.8 Nm)
31	(XXX)	(XXX)	1 7/32	163	194	63	SOGX 100408 32-...	239652_15IP1 (2.8 Nm)
31,5	(XXX)	(XXX)	–	167	199	63	SOGX 100408 32-...	239652_15IP1 (2.8 Nm)
32	(XXX)	(XXX)	–	167	199	63	SOGX 100408 32-...	239652_15IP1 (2.8 Nm)
32,5	(XXX)	(XXX)	1 9/32	172	205	63	SOGX 100408 32-...	239652_15IP1 (2.8 Nm)
33	(XXX)	(XXX)	–	172	205	63	SOGX 100408 32-...	239652_15IP1 (2.8 Nm)
33,5	(XXX)	(XXX)	–	176	210	63	SOGX 110408 38-...	239652_15IP1 (2.8 Nm)
34	(XXX)	(XXX)	–	176	210	63	SOGX 110408 38-...	239652_15IP1 (2.8 Nm)
34,5	(XXX)	(XXX)	–	181	216	63	SOGX 110408 38-...	239652_15IP1 (2.8 Nm)
35	(XXX)	(XXX)	1 3/8	181	216	63	SOGX 110408 38-...	239652_15IP1 (2.8 Nm)
35,5	(XXX)	(XXX)	–	185	221	63	SOGX 110408 38-...	239652_15IP1 (2.8 Nm)
36	(XXX)	(XXX)	–	185	221	63	SOGX 110408 38-...	239652_15IP1 (2.8 Nm)
36,5	(XXX)	(XXX)	1 7/16	190	227	63	SOGX 110408 38-...	239652_15IP1 (2.8 Nm)
37	(XXX)	(XXX)	–	190	227	63	SOGX 110408 38-...	239652_15IP1 (2.8 Nm)
37,5	(XXX)	(XXX)	–	194	232	63	SOGX 120408 42-...	239652_20IP (6.3 Nm)
38	(XXX)	(XXX)	1 12	194	232	63	SOGX 120408 42-...	239652_20IP (6.3 Nm)
38,5	(XXX)	(XXX)	–	199	238	63	SOGX 120408 42-...	239652_20IP (6.3 Nm)
39	(XXX)	(XXX)	–	199	238	63	SOGX 120408 42-...	239652_20IP (6.3 Nm)
39,2	(XXX)	(XXX)	–	203	243	63	SOGX 120408 42-...	239652_20IP (6.3 Nm)
39,5	(XXX)	(XXX)	–	203	243	63	SOGX 120408 42-...	239652_20IP (6.3 Nm)
40	(XXX)	(XXX)	–	203	243	63	SOGX 120408 42-...	239652_20IP (6.3 Nm)
40,5	(XXX)	(XXX)	1 19/32	208	249	63	SOGX 120408 42-...	239652_20IP (6.3 Nm)
41	(XXX)	(XXX)	–	208	249	63	SOGX 120408 42-...	239652_20IP (6.3 Nm)
41,5	(XXX)	(XXX)	–	212	254	63	SOGX 120408 42-...	239652_20IP (6.3 Nm)
42	(XXX)	(XXX)	1 21/32	212	254	63	SOGX 120408 42-...	239652_20IP (6.3 Nm)
42,5	(XXX)	(XXX)	–	217	260	63	SOGX 130508 46-...	239652_20IP (6.3 Nm)
43	(XXX)	(XXX)	–	217	260	63	SOGX 130508 46-...	239652_20IP (6.3 Nm)
43,5	(XXX)	(XXX)	–	221	265	63	SOGX 130508 46-...	239652_20IP (6.3 Nm)
44	(XXX)	(XXX)	–	221	265	63	SOGX 130508 46-...	239652_20IP (6.3 Nm)
44,5	(XXX)	(XXX)	1 3/4	226	271	63	SOGX 130508 46-...	239652_20IP (6.3 Nm)
45	(XXX)	(XXX)	–	226	271	63	SOGX 130508 46-...	239652_20IP (6.3 Nm)
45,5	(XXX)	(XXX)	–	230	276	63	SOGX 130508 46-...	239652_20IP (6.3 Nm)
46	(XXX)	(XXX)	1 13/16	230	276	63	SOGX 130508 46-...	239652_20IP (6.3 Nm)

KOMET® Carbide indexable inserts SOGX.. for KUB Pentron® type W80

Note: 23 6607 – Do not use in the centre pocket of indexable drills!

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	Uni
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	K	
23 6605/23 6609	400	250	200	260	240	220	180	160						150	150		140	●
23 6607																	120	●
23 6608	500	280	220															●
23 6610														160	160	75		●

23 6605

23 6607

23 6608

23 6609

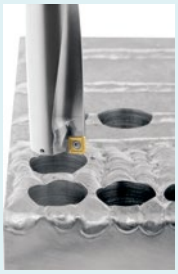
23 6610

Designation type W80			10-010	10-030	12-010	12-030	18-010	18-030	20-010	20-030		Type
24R 23 6605	KOMET® indexable insert	BK8425	XXX	–	XXX	–	XXX	–	XXX	–	10	Uni
24R 23 6607		BK6115	XXX	–	XXX	–	XXX	–	XXX	–	10	GG(G)
24R 23 6608		BK7710	XXX	–	XXX	–	XXX	–	XXX	–	10	Alu
24R 23 6609		BK8430	–	XXX	–	XXX	–	XXX	–	XXX	10	Uni
24R 23 6610		BK7935	XXX	–	XXX	–	XXX	–	XXX	–	10	Inox
ISO code indexable insert			SOGX 040204-01	SOGX 040204-03	SOGX 050204-01	SOGX 050204-03	SOGX 060206-01	SOGX 060206-03	SOGX 07T208-01	SOGX 07T208-03		
Feed f in steel < 900 N/mm²		mm/rev.	0.07	0.07	0.1	0.1	0.1	0.1	0.12	0.12		

Designation type W80			24-010	24-030	28-010	28-030	32-010	32-030	38-010	38-030		Type
24R 23 6605	KOMET® indexable insert	BK8425	XXX	–	XXX	–	XXX	–	XXX	–	10	Uni
24R 23 6607		BK6115	XXX	–	XXX	–	XXX	–	XXX	–	10	GG(G)
24R 23 6608		BK7710	XXX	–	XXX	–	XXX	–	XXX	–	10	Alu
24R 23 6609		BK8430	–	XXX	–	XXX	–	XXX	–	XXX	10	Uni
24R 23 6610		BK7935	XXX	–	XXX	–	XXX	–	XXX	–	10	Inox
ISO code indexable insert			SOGX 080308-01	SOGX 080308-03	SOGX 09T308-01	SOGX 09T308-03	SOGX 100408-01	SOGX 100408-03	SOGX 110408-01	SOGX 110408-03		
Feed f in steel < 900 N/mm²		mm/rev.	0.13									

Designation type W80			42-010	42-030	46-010	46-030		Type
24R 23 6605	KOMET® indexable insert	BK8425	XXX	–	XXX	–	10	Uni
24R 23 6607		BK6115	XXX	–	XXX	–	10	GG(G)
24R 23 6608		BK7710	XXX	–	XXX	–	10	Alu
24R 23 6609		BK8430	–	XXX	–	XXX	10	Uni
24R 23 6610		BK7935	XXX	–	XXX	–	10	Inox
ISO code indexable insert			SOGX 120408-01	SOGX 120408-03	SOGX 130508-01	SOGX 130508-03		
Feed f in steel < 900 N/mm²		mm/rev.	0.13					

KOMET® KUB Pentron® ideal for extreme machining situations


Spot-facing on a weld seam or corrugated surface.

Spot-facing on a step.

Spot-facing on a sharp corner.

Drilling through stacked components.

KOMET® Indexable drill KUB Trigon® 3×D right-hand cutting

- Special manufacturing procedure for extremely large flutes with very high rigidity.
- Specific positioning of the indexable inserts for bores free of withdrawal marks and with precise dimensional stability(± 0.1 mm as a rule).
- Internal coolant supply is directed to the cutting edges (sophisticated geometry, ideal for minimum lubrication).
- 3 – 10 bar coolant pressure is sufficient.
- For stationary and rotating applications.

23 6635 – ■ Offset-axis drilling: Ø-dependent up to 1.5 mm, e.g. possible with offset axis unit (No. 239010 - 239030).

Application: With indexable inserts No. 236740 – 237080.

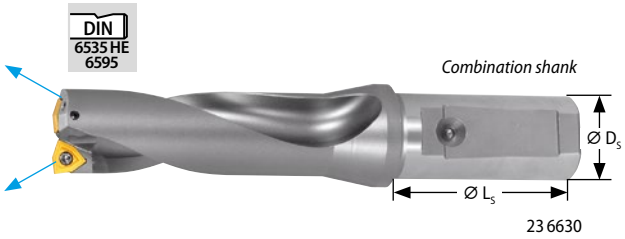
Supplied with: Clamp screws (without indexable inserts).

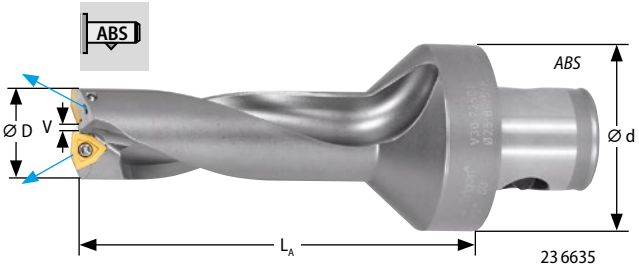
Note:

■ Note! A disc falls off when the drill exits. Risk of injury if the component is rotating! Please take safety precautions.

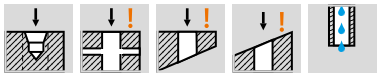
■ **On request**
– left-hand cutting;
– 2×D, – other Ø;
– special types
– torsional vibration damper for ABS giving low-vibration machining, with maximum tool life and minimum noise level.

23 6635 – ■ For suitable ABS® arbors see Group Cat. No. 239000 – 239102, for further arbors see catalogue part 3 - Clamping section.





Ø D	24P 23 6630	24P 23 6635	for inch Ø	L$_A$		Ø D$_s$	L$_s$	ABS® Ø d	achievable maximum Ø offset	V$_{max}$ adjustment from the centre	ISO code indexable insert	Pack of insert screws
	KOMET KUB Trigon® indexable drill											
	Combination shank	ABS 50		23 6630	23 6635	23 6630	23 6630	23 6635				
mm	3×D	3×D	inch	mm	mm	mm	mm	mm	mm	mm		
14	XXX	XXX	–	66	77	25	56	50	15	0.5	WOEX 030204 10-...	239652_6IP1 (0.6 Nm)
15	XXX	XXX	19/32	69	80	25	56	50	16	0.5	WOEX 030204 10-...	239652_6IP1 (0.6 Nm)
16	XXX	XXX	–	72	83	25	56	50	17	0.5	WOEX 030204 10-...	239652_6IP1 (0.6 Nm)
17	XXX	(XXX)	–	75	86	25	56	50	18	0.5	WOEX 030204 10-...	239652_6IP1 (0.6 Nm)
17,5	XXX	XXX	11/16	78	89	25	56	50	18.5	0.5	WOEX 030204 10-...	239652_6IP1 (0.6 Nm)
18	XXX	XXX	–	78	89	25	56	50	19	0.5	WOEX 030204 10-...	239652_6IP1 (0.6 Nm)
18,5	XXX	(XXX)	–	81	92	25	56	50	19.5	0.5	WOEX 030204 10-...	239652_6IP1 (0.6 Nm)
19	XXX	XXX	3/4	81	92	25	56	50	20	0.5	WOEX 030204 10-...	239652_6IP1 (0.6 Nm)
19,5	XXX	XXX	–	84	95	25	56	50	20	0.25	WOEX 030204 10-...	239652_6IP1 (0.6 Nm)
20	XXX	XXX	–	84	95	25	56	50	21	0.5	WOEX 040304 18-...	239652_6IP2 (1.0 Nm)
21	XXX	XXX	–	87	98	25	56	50	22	0.5	WOEX 040304 18-...	239652_6IP2 (1.0 Nm)
22	XXX	XXX	–	90	101	25	56	50	23	0.5	WOEX 040304 18-...	239652_6IP2 (1.0 Nm)
22,5	XXX	–	–	93	–	25	56	–	23.5	0.5	WOEX 040304 18-...	239652_6IP2 (1.0 Nm)
23	XXX	XXX	29/32	93	104	25	56	50	24	0.5	WOEX 040304 18-...	239652_6IP2 (1.0 Nm)
24	XXX	XXX	–	96	107	25	56	50	25	0.5	WOEX 040304 18-...	239652_6IP2 (1.0 Nm)
24,5	XXX	XXX	–	99	110	25	56	50	25.5	0.5	WOEX 040304 18-...	239652_6IP2 (1.0 Nm)
25	XXX	XXX	–	99	110	25	56	50	26	0.5	WOEX 05T304 24-...	239652_8IP2 (1.3 Nm)
26	XXX	XXX	–	102	113	32	60	50	28	1	WOEX 05T304 24-...	239652_8IP2 (1.3 Nm)
26,5	XXX	XXX	–	105	116	32	60	50	28.5	1	WOEX 05T304 24-...	239652_8IP2 (1.3 Nm)
27	XXX	(XXX)	1 1/16	105	116	32	60	50	30	1.5	WOEX 05T304 24-...	239652_8IP2 (1.3 Nm)
28	XXX	XXX	–	108	119	32	60	50	31	1.5	WOEX 05T304 24-...	239652_8IP2 (1.3 Nm)
29	XXX	XXX	–	111	122	32	60	50	32	1.5	WOEX 05T304 24-...	239652_8IP2 (1.3 Nm)
29,5	XXX	(XXX)	–	114	125	32	60	50	32.5	1.5	WOEX 05T304 24-...	239652_8IP2 (1.3 Nm)
30	XXX	XXX	–	119	130	32	60	50	32.5	1.25	WOEX 05T304 24-...	239652_8IP2 (1.3 Nm)
31	XXX	XXX	1 7/32	122	133	32	60	50	33.5	1.25	WOEX 05T304 24-...	239652_8IP2 (1.3 Nm)
32	XXX	XXX	–	125	136	32	60	50	34	1	WOEX 05T304 24-...	239652_8IP2 (1.3 Nm)
33	XXX	XXX	–	128	139	32	60	50	34	0.5	WOEX 05T304 24-...	239652_8IP2 (1.3 Nm)
34	XXX	XXX	–	131	142	32	60	50	35	0.5	WOEX 05T304 24-...	239652_8IP2 (1.3 Nm)
35	XXX	XXX	1 3/8	134	145	32	60	50	36	0.5	WOEX 05T304 24-...	239652_8IP2 (1.3 Nm)
36	XXX	XXX	–	137	148	32	60	50	37	0.5	WOEX 05T304 24-...	239652_8IP2 (1.3 Nm)
37	–	(XXX)	–	–	161	–	–	50	40	1.5	WOEX 06T304 34-...	239652_10IP1 (2.8 Nm)
38	XXX	XXX	1 1/12	153	164	32	60	50	41	1.5	WOEX 06T304 34-...	239652_10IP1 (2.8 Nm)
39	XXX	XXX	–	156	167	32	60	50	42	1.5	WOEX 06T304 34-...	239652_10IP1 (2.8 Nm)
39,5	–	(XXX)	–	–	170	–	–	50	42.5	1.5	WOEX 06T304 34-...	239652_10IP1 (2.8 Nm)
40	XXX	XXX	–	159	170	32	60	50	43	1.5	WOEX 06T304 34-...	239652_10IP1 (2.8 Nm)
41	–	XXX	–	–	173	–	–	50	44	1.5	WOEX 06T304 34-...	239652_10IP1 (2.8 Nm)
42	XXX	XXX	1 21/32	165	176	32	60	50	45	1.5	WOEX 06T304 34-...	239652_10IP1 (2.8 Nm)
43	–	XXX	–	–	179	–	–	50	45	1	WOEX 06T304 34-...	239652_10IP1 (2.8 Nm)
44	XXX	XXX	–	171	182	32	60	50	45	0.5	WOEX 06T304 34-...	239652_10IP1 (2.8 Nm)



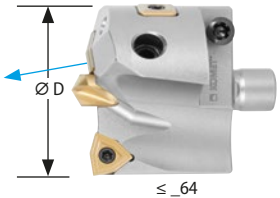
KOMET® KUB Centron® indexable drill

- Process reliable up to 8 (9)×D.
- Centring by centring point and slide bars.
- Stiff joint between base body and drill head.
- Ø of the slide bars is matched to indexable inserts with 0.4 mm edge radii. For through holes the Ø of the slide bars can be adjusted by means of shims.

Suitable for: Base body No. 236652 – 236654.

Application:
- For rotating and stationary as well as vertical and horizontal use in all materials.
- With centring tips No. 236655 – 236657.
- With indexable inserts No. 236740 – 237080.

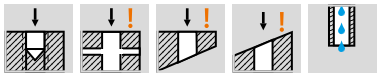
Supplied with: Drill head including slide bars (spare slide bars No. 236658).
From Ø 65 mm with indexable insert cartridges (cartridge for the outer indexable insert adjustable + 1 mm on the Ø).



≤ _64

≥ _65

Ø D mm	24L 23 6650 KOMET KUB Centron® drill head	for inch Ø inch	Base body size	Screw for base body	Centring tip size	ISO code indexable insert	Pack of insert screws
20	XXX	–	20	239655_8IP	20	WOEX 030204	239655_6IP (0.6 Nm)
21	XXX	–	20	239655_8IP	20	WOEX 030204	239655_6IP (0.6 Nm)
22	XXX	–	20	239655_8IP	20	WOEX 030204	239655_6IP (0.6 Nm)
23	XXX	29/32	20	239655_8IP	20	WOEX 030204	239655_6IP (0.6 Nm)
24	XXX	–	20	239655_8IP	20	WOEX 030204	239655_6IP (0.6 Nm)
25	XXX	–	20	239655_8IP	20	WOEX 030204	239655_6IP (0.6 Nm)
26	XXX	–	26	239655_8IP1	26	WOEX 040304	239655_6IP (0.6 Nm)
27	XXX	1 1/16	26	239655_8IP1	26	WOEX 040304	239655_6IP (0.6 Nm)
28	XXX	–	26	239655_8IP1	26	WOEX 040304	239655_6IP (0.6 Nm)
29	XXX	–	26	239655_8IP1	26	WOEX 040304	239655_6IP (0.6 Nm)
30	XXX	–	26	239655_8IP1	26	WOEX 040304	239655_6IP (0.6 Nm)
31	XXX	1 7/32	26	239655_8IP1	26	WOEX 040304	239655_6IP (0.6 Nm)
32	XXX	–	26	239655_8IP1	26	WOEX 040304	239655_6IP (0.6 Nm)
33	XXX	–	33	239655_15IP1	26	WOEX 05T304	239655_8IP2 (1.3 Nm)
34	XXX	–	33	239655_15IP1	26	WOEX 05T304	239655_8IP2 (1.3 Nm)
35	XXX	1 3/8	33	239655_15IP1	26	WOEX 05T304	239655_8IP2 (1.3 Nm)
36	XXX	–	33	239655_15IP1	26	WOEX 05T304	239655_8IP2 (1.3 Nm)
37	XXX	–	33	239655_15IP1	26	WOEX 05T304	239655_8IP2 (1.3 Nm)
38	XXX	1 1/2	33	239655_15IP1	26	WOEX 05T304	239655_8IP2 (1.3 Nm)
39	XXX	–	33	239655_15IP1	26	WOEX 05T304	239655_8IP2 (1.3 Nm)
40	XXX	–	40	239655_20IP1	40	WOEX 05T304	239655_8IP2 (1.3 Nm)
41	XXX	–	40	239655_20IP1	40	WOEX 05T304	239655_8IP2 (1.3 Nm)
42	XXX	1 21/32	40	239655_20IP1	40	WOEX 05T304	239655_8IP2 (1.3 Nm)
43	XXX	–	40	239655_20IP1	40	WOEX 05T304	239655_8IP2 (1.3 Nm)
44	XXX	–	40	239655_20IP1	40	WOEX 05T304	239655_8IP2 (1.3 Nm)
45	XXX	–	40	239655_20IP1	40	WOEX 05T304	239655_8IP2 (1.3 Nm)
46	XXX	1 13/16	46	239655_20IP	46	WOEX 06T304	239655_10IP (2.8 Nm)
47	XXX	–	46	239655_20IP	46	WOEX 06T304	239655_10IP (2.8 Nm)
48	XXX	–	46	239655_20IP	46	WOEX 06T304	239655_10IP (2.8 Nm)
49	XXX	–	46	239655_20IP	46	WOEX 06T304	239655_10IP (2.8 Nm)
50	XXX	1 31/32	46	239655_20IP	46	WOEX 06T304	239655_10IP (2.8 Nm)
51	XXX	–	46	239655_20IP	46	WOEX 06T304	239655_10IP (2.8 Nm)
52	XXX	–	46	239655_20IP	46	WOEX 06T304	239655_10IP (2.8 Nm)
53	XXX	–	46	239655_20IP	46	WOEX 06T304	239655_10IP (2.8 Nm)
54	XXX	2 1/8	46	239655_20IP	46	WOEX 06T304	239655_10IP (2.8 Nm)
55	XXX	–	55	239655_20IP2	46	WOEX 080404	239655_15IP (6.3 Nm)
56	XXX	–	55	239655_20IP2	46	WOEX 080404	239655_15IP (6.3 Nm)
57	XXX	–	55	239655_20IP2	46	WOEX 080404	239655_15IP (6.3 Nm)
58	XXX	2 9/32	55	239655_20IP2	46	WOEX 080404	239655_15IP (6.3 Nm)
59	XXX	–	55	239655_20IP2	46	WOEX 080404	239655_15IP (6.3 Nm)
60	XXX	–	55	239655_20IP2	46	WOEX 080404	239655_15IP (6.3 Nm)
61	XXX	–	55	239655_20IP2	46	WOEX 080404	239655_15IP (6.3 Nm)
62	XXX	2 7/16	55	239655_20IP2	46	WOEX 080404	239655_15IP (6.3 Nm)
63	XXX	–	55	239655_20IP2	46	WOEX 080404	239655_15IP (6.3 Nm)
64	XXX	–	55	239655_20IP2	46	WOEX 080404	239655_15IP (6.3 Nm)
65	XXX	2 9/16	65	239655_20IP3	65	WOEX 05T304	239655_8IP2 (1.3 Nm)
66	XXX	–	65	239655_20IP3	65	WOEX 05T304	239655_8IP2 (1.3 Nm)
67	XXX	–	65	239655_20IP3	65	WOEX 05T304	239655_8IP2 (1.3 Nm)
68	XXX	–	65	239655_20IP3	65	WOEX 05T304	239655_8IP2 (1.3 Nm)
69	XXX	2 23/32	65	239655_20IP3	65	WOEX 05T304	239655_8IP2 (1.3 Nm)
70	XXX	–	65	239655_20IP3	65	WOEX 05T304	239655_8IP2 (1.3 Nm)
71	XXX	–	65	239655_20IP3	65	WOEX 05T304	239655_8IP2 (1.3 Nm)
72	XXX	–	72	239655_20IP3	65	WOEX 05T304	239655_8IP2 (1.3 Nm)
73	XXX	2 7/8	72	239655_20IP3	65	WOEX 05T304	239655_8IP2 (1.3 Nm)
74	XXX	–	72	239655_20IP3	65	WOEX 05T304	239655_8IP2 (1.3 Nm)
75	XXX	–	72	239655_20IP3	65	WOEX 05T304	239655_8IP2 (1.3 Nm)
76	XXX	–	72	239655_20IP3	65	WOEX 05T304	239655_8IP2 (1.3 Nm)
77	XXX	3 1/32	72	239655_20IP3	65	WOEX 05T304	239655_8IP2 (1.3 Nm)
78	XXX	–	72	239655_20IP3	65	WOEX 05T304	239655_8IP2 (1.3 Nm)
79	XXX	–	72	239655_20IP3	65	WOEX 05T304	239655_8IP2 (1.3 Nm)
80	XXX	–	72	239655_20IP3	65	WOEX 05T304	239655_8IP2 (1.3 Nm)
81	XXX	3 3/16	72	239655_20IP3	65	WOEX 05T304	239655_8IP2 (1.3 Nm)

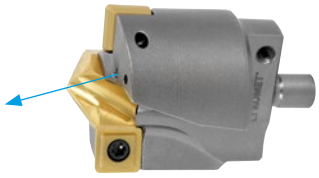


KOMET® KUB Centron® Powerline drill head

The drill point guides the tool precisely on the axis of the hole, thus ensuring both straightness and very high process reliability, with stability in hole depths up to 9×D.
Spot drilling on flat level surfaces without a pilot hole.
Drill head without slide bars and slide bar adjustment.

Application: For rotating and stationary as well as vertical and horizontal use in all materials.
With centring tip No. 236659.
With indexable inserts No. 236520 – 236576.

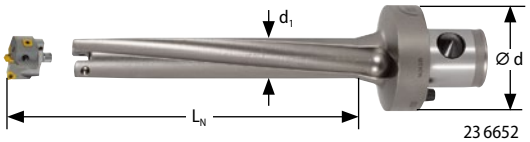
Note: Further sizes available on request.



23 6651

∅ D mm	24L 23 6651 KOMET KUB Centron® Powerline drill head	Base body size	Screw for base body	Centring tip size	ISO code indexable insert	Pack of insert screws
20	XXX	20	239653_8IP8	10	SOEX 060306	239652_6IP2 (1.0 Nm)
21	XXX	20	239653_8IP8	10	SOEX 060306	239652_6IP2 (1.0 Nm)
22	XXX	20	239653_8IP8	20	SOEX 060306	239652_6IP2 (1.0 Nm)
23	XXX	20	239653_8IP8	30	SOEX 060306	239652_6IP2 (1.0 Nm)
24	XXX	20	239653_8IP8	40	SOEX 060306	239652_6IP2 (1.0 Nm)
25	XXX	20	239653_8IP8	20	SOEX 07T308	239652_8IP1 (1.3 Nm)
26	XXX	26	239653_8IP9	30	SOEX 07T308	239652_8IP1 (1.3 Nm)
27	XXX	26	239653_8IP9	40	SOEX 07T308	239652_8IP1 (1.3 Nm)
28	XXX	26	239653_8IP9	50	SOEX 07T308	239652_8IP1 (1.3 Nm)
29	XXX	26	239653_8IP9	60	SOEX 07T308	239652_8IP1 (1.3 Nm)
30	XXX	26	239653_8IP9	40	SOEX 090408	239652_15IP1 (2.8 Nm)
31	XXX	26	239653_8IP9	50	SOEX 090408	239652_15IP1 (2.8 Nm)
32	XXX	26	239653_8IP9	60	SOEX 090408	239652_15IP1 (2.8 Nm)
33	XXX	33	239653_15IP	40	SOEX 110508	239652_15IP2 (2.8 Nm)
33,2	XXX	33	239653_15IP	50	SOEX 110508	239652_15IP2 (2.8 Nm)
34	XXX	33	239653_15IP	50	SOEX 110508	239652_15IP2 (2.8 Nm)
35	XXX	33	239653_15IP	60	SOEX 110508	239652_15IP2 (2.8 Nm)
36	XXX	33	239653_15IP	70	SOEX 110508	239652_15IP2 (2.8 Nm)
37	XXX	33	239653_15IP	50	SOEX 120508	239652_20IP (6.3 Nm)
38	XXX	33	239653_15IP	60	SOEX 120508	239652_20IP (6.3 Nm)
39	XXX	33	239653_15IP	70	SOEX 120508	239652_20IP (6.3 Nm)
39,2	XXX	33	239653_15IP	70	SOEX 120508	239652_20IP (6.3 Nm)

KOMET® KUB Centron® / KUB Centron® Powerline base body



23 6652

∅ D		mm	20	26	33	40	46	55	65	72
24K 23 6653	KOMET® base body	4×D	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
24K 23 6652		6×D	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
24K 23 6654		8×D	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
suitable for drilling head		mm	20 – 25	26 – 32	33 – 39.2	40 – 45	46 – 54	55 – 64	65 – 71	72 – 81
L_N (23 6653)		mm	113	130	160	185	215	260	295	325
L_N (23 6652)		mm	150	175	215	260	310	370	420	460
L_N (23 6654)		mm	200	230	290	340	415	495	560	610
∅ d_1		mm	19	25	32	38.5	44.5	53.5	63.5	70.5
L_{tot} (23 6653)		mm	145	160	195	235	280	325	375	405
L_{tot} (23 6652)		mm	185	210	255	310	375	435	500	540
L_{tot} (23 6654)		mm	235	260	330	390	480	560	640	690
ABS® ∅ d		mm	50	50	50	63	80	80	80	100

KOMET® KUB Centron® / KUB Centron® Powerline centring / drill tip

Type			20	26	40	46	65	Suitability
24M 23 6655	KOMET KUB Centron® centring point, HSS	TiAlN	XXX	XXX	XXX	XXX	XXX	Stainless steel / cast iron
24M 23 6656		TiN	XXX	XXX	XXX	XXX	XXX	Steel / alu
24M 23 6657	KOMET KUB Centron® centring point, carbide	TiN	XXX	XXX	XXX	XXX	–	Steel / stainless steel
∅ d_2		mm	5	6	8	10	12	
suitable for drilling head		mm	20 – 25	26 – 39	40 – 45	46 – 64	65 – 81	

33 6655

33 6656

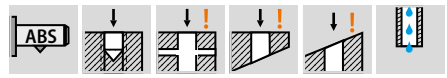
33 6657

Type			10	20	30	40	50	60	70	Clamping screw
24M 23 6659	KOMET KUB Centron® Powerline carbide drill tip	TiN	XXX	XXX	XXX	XXX	XXX	XXX	XXX	239654_8IP
∅ d_2		mm	10.3	11.3	12.3	13.3	14.3	15.3	16.3	
suitable for drilling head		mm	20; 21	22; 25	23; 26	24; 27; 30; 33	28; 31; 33.2; 34; 37	29; 32; 35; 38	36; 39; 39.2	

33 6659

KOMET® KUB® V464 indexable drill

Drill head

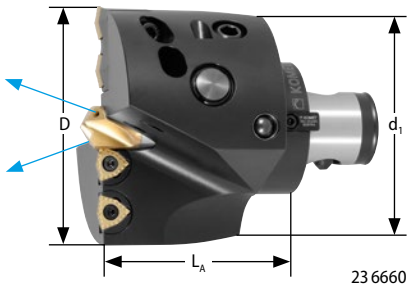


Indexable drill holder (drill head) with indexable insert cartridges and BS® T connection, right-hand cutting. The indexable insert cartridge for the outer indexable insert is adjustable by + 5 mm on the Ø. Use with arbors in ABS® N and extensions ABS® T.

Application: With centring tip No. 236661 - 236662.
With indexable inserts No. 236740 - 237080.

Supplied with: Drill head with cartridges.

Note: Spare parts on request.



23 6660

Ø D mm	24L 23 6660 KOMET KUB® V464 drill head	for inch Ø inch	L_A mm	ABS® T Ø d mm	Ø d_1 mm	Centring tip size	ISO code indexable insert	Pack of insert screws
80	XXX	–	75	50	78.5	80	WOEX06T304	239655_10IP (2.8 Nm)
85	XXX	3 11/32	75	50	83.5	80	WOEX06T304	239655_10IP (2.8 Nm)
90	XXX	–	75	50	87.5	80	WOEX06T304	239655_10IP (2.8 Nm)
95	XXX	–	75	50	92.5	80	WOEX06T304	239655_10IP (2.8 Nm)
100	XXX	3 15/16	85	63	97.2	80	WOEX080404	239655_15IP (6.3 Nm)
105	XXX	–	85	63	102.5	80	WOEX080404	239655_15IP (6.3 Nm)
110	XXX	–	85	63	107.5	80	WOEX080404	239655_15IP (6.3 Nm)
115	XXX	4 17/32	85	63	112.5	115	WOEX080404	239655_15IP (6.3 Nm)
120	XXX	–	85	63	118.5	115	WOEX06T304	239655_10IP (2.8 Nm)
125	XXX	–	85	63	123.5	115	WOEX06T304	239655_10IP (2.8 Nm)
130	XXX	–	90	80	127.5	115	WOEX06T304	239655_10IP (2.8 Nm)
135	XXX	5 5/16	90	80	132.5	115	WOEX06T304	239655_10IP (2.8 Nm)
140	XXX	–	90	80	137.5	115	WOEX06T304	239655_10IP (2.8 Nm)
145	XXX	–	90	80	142.5	115	WOEX080404	239655_15IP (6.3 Nm)
150	XXX	5 29/32	90	80	147.5	115	WOEX080404	239655_15IP (6.3 Nm)
155	XXX	–	90	80	152.5	115	WOEX080404	239655_15IP (6.3 Nm)

Centres

Type			80	115	Suitability
24M 23 6661	KOMET KUB® V464 centring point, HSS	TiN	XXX	XXX	Alu; Steel
24M 23 6662		TiAlN	XXX	XXX	Cast iron; Inox
Ø d_2		mm	16	20	
suitable for drilling head		mm	80 – 110	115 – 155	

23 6661

23 6662

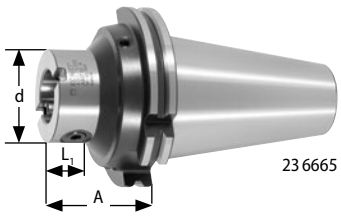
Arbors ABS® N

23 6665 – DIN 69871, form AD/B
23 6666/6667 – DIN 69893

Note: Compatible with ABS® T.

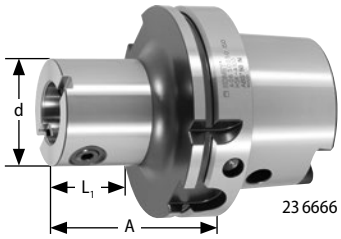
ABS® N Ø d		mm	50	63	80
24A 23 6665	KOMET® arbor	SK 50	XXX	XXX	XXX
24A 23 6666		HSK-A 63	XXX	–	(XXX)
24A 23 6667		HSK-A 100	XXX	XXX	XXX
A (23 6665)		mm	60	60	70
A (23 6666)		mm	70	–	70
A (23 6667)		mm	80	80	90
L_1 (23 6665)		mm	22	29	50
L_1 (23 6666)		mm	44	–	44
L_1 (23 6667)		mm	51	51	61

DIN 69871
Form ADB



23 6665

DIN 69893

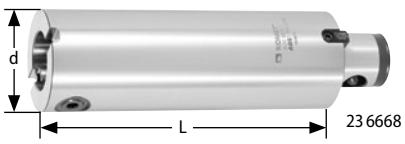


23 6666

Extensions ABS® T

Note: Compatible with ABS® N.

ABS® T Ø d		mm	50	63	80	Length L mm
24A 23 6668	KOMET® extension		XXX	–	–	100
24A 23 6669			–	XXX	XXX	125
24A 23 6670			XXX	–	–	150
24A 23 6671			–	XXX	–	190
24A 23 6672			–	–	XXX	240

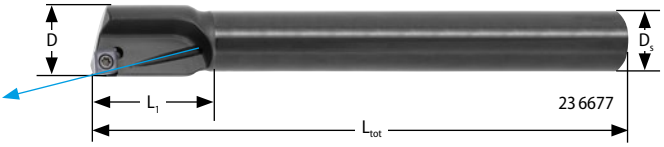


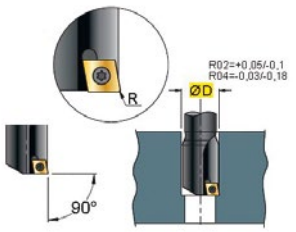
23 6668

Garant® Precision boring bar

Application: For boring our pre-drilled or cast holes to the nominal ∅ in combination with eccentric sleeve No. 236679.
For standard ISO indexable inserts CC..0602.

Note: The ∅ to be bored out must not be less than D_{min}.





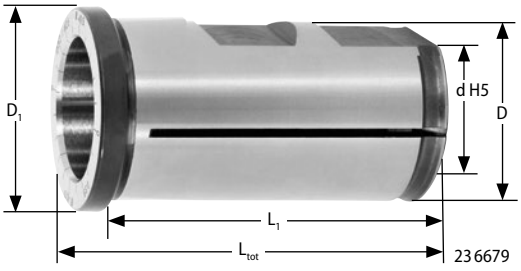
Nominal ∅ D	21S 23 6677 Precision boring bar	∅ d_{min}	Adjustment range with eccentric clamping sleeve	L_1	L_{tot}	∅ D_s h6	suitable eccentric clamping sleeve size No. 236679	suitable indexable insert	Pack of insert screws
mm	DIN 1835 A	mm	mm	mm	mm	mm			
9,8	XXX	8.8	9.5 – 10.3	23	85	8	8	260142 HB725	269410 (7IP; 1.0 Nm)
10,8	XXX	9.8	10.5 – 11.3	24	95	10	10	260142 HB725	269410 (7IP; 1.0 Nm)
11,8	XXX	10.8	11.5 – 12.3	25	100	10	10	260142 HB725	269410 (7IP; 1.0 Nm)
12,8	XXX	11.8	12.5 – 13.3	26	105	10	10	260142 HB725	269410 (7IP; 1.0 Nm)
13,8	XXX	12.8	13.5 – 14.3	27	110	10	10	260142 HB725	269410 (7IP; 1.0 Nm)
14,8	XXX	13.8	14.5 – 15.3	28	120	12	12	260142 HB725	269410 (7IP; 1.0 Nm)
15,8	XXX	14.8	15.5 – 16.3	29	125	12	12	260142 HB725	269440 (8IP; 1.2 Nm)
16,8	XXX	15.8	16.5 – 17.3	30	133	16	16	260142 HB725	269440 (8IP; 1.2 Nm)
17,8	XXX	16.8	17.5 – 18.3	31	138	16	16	260142 HB725	269440 (8IP; 1.2 Nm)
18,8	XXX	17.8	18.5 – 19.3	32	143	16	16	260142 HB725	269440 (8IP; 1.2 Nm)
19,8	XXX	18.8	19.5 – 20.3	33	148	16	16	260142 HB725	269440 (8IP; 1.2 Nm)
20,8	XXX	19.8	20.5 – 21.3	34	154	16	16	260142 HB725	269440 (8IP; 1.2 Nm)
21,8	XXX	20.8	21.5 – 22.3	35	158	16	16	260142 HB725	269440 (8IP; 1.2 Nm)
22,8	XXX	21	22.5 – 23.3	36	165	20	20	260142 HB725	269440 (8IP; 1.2 Nm)
23,8	XXX	22	23.5 – 24.3	37	170	20	20	260142 HB725	269440 (8IP; 1.2 Nm)
24,8	XXX	23	24.5 – 25.3	38	175	20	20	260142 HB725	269440 (8IP; 1.2 Nm)
25,8	XXX	24	25.5 – 26.3	39	180	20	20	260142 HB725	269440 (8IP; 1.2 Nm)
26,8	XXX	25	26.5 – 27.3	40	185	20	20	260142 HB725	269440 (8IP; 1.2 Nm)
27,8	XXX	26	27.5 – 28.3	41	190	20	20	260142 HB725	269440 (8IP; 1.2 Nm)
28,8	XXX	27	28.5 – 29.3	42	195	20	20	260142 HB725	269440 (8IP; 1.2 Nm)
29,8	XXX	28	29.5 – 30.3	43	195	20	20	260142 HB725	269440 (8IP; 1.2 Nm)
30,8	XXX	29	30.5 – 31.3	44	195	25	25	260142 HB725	269440 (8IP; 1.2 Nm)
31,8	XXX	30	31.5 – 32.3	45	195	25	25	260142 HB725	269440 (8IP; 1.2 Nm)

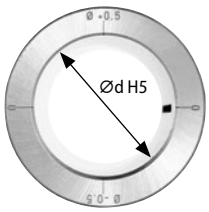
Garant® Eccentric clamping sleeves (Weldon shanks to DIN 1835 B)

Adjustment range in the ∅ ±0.5 mm.
For use in conjunction with boring bars (No. 236677) -0.3 / +0.5 mm adjustment range to the nominal ∅ .

Application: Tool for boring to "fixed size" in conjunction with precision boring bar.
Fitted in side lock arbors with Weldon shank ∅ 25; 32 and 40 mm to DIN 1835 B.

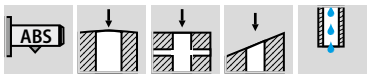
Note: The exact adjustment of the diameter is performed on the pre-setter by rotating the boring bar.





∅ d H5	mm	8	10	12	16	20	25	32
2IP 23 6679	Eccentric clamping sleeve	XXX	XXX	XXX	XXX	XXX	XXX	XXX
∅ D	mm	25	25	25	25	32	40	40
∅ D_1	mm	29	29	29	29	36	44	44
L_{tot}	mm	62	62	62	62	66	76	76
L_1	mm	57	57	57	57	61	71	71

KOMET TwinKom® G01 twin cutter



- Radially adjustable cartridges for absolute twin boring applications allow a changing of function to a stepped tool for greater cutting depths.
- Compact tool design.
- Adjustable ball nozzle for direct coolant supply to the cutting edges.
- In the case of deep boring-out operations, the helical flutes improve chip evacuation.
- Minimum lubrication compatible with 1 channel

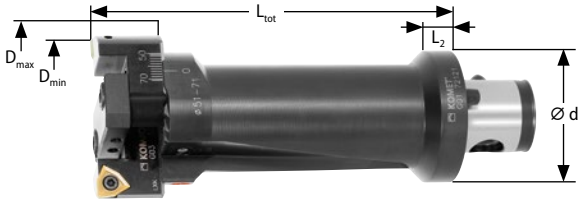
Size 109-167; 139-215 – With axial adjustment.

Note: **Please order cartridges and indexable inserts separately.**
Other versions and sizes available on request.
Ordering example:
1× No. 236680 size 24-32 – Base body for twin boring head G01.
2× No. 236684 size 24-32 – Cartridge for twin boring head.
10× No. 236520 size 18-010 – Indexable inserts for general purpose use (in grade BK8425).

Release the clamp screw only on one side.

Adjust Ø and retighten the clamp screw.

23 6680_51–71



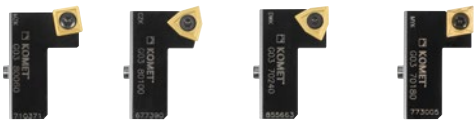
23 6682 _51–71

Ø D_{min} – Ø D_{max}	24F 23 6680	24F 23 6682	L_2		L_{tot}		ABS® Ø d	
	KOMET TwinKom® basic body for twin cutter without axial adjustment with ABS® shank							
mm	short	long	23 6680 mm	23 6682 mm	23 6680 mm	23 6682 mm	23 6680 mm	23 6682 mm
24-32	XXX	XXX	6	7	45	70	25	32
30-41	XXX	XXX	–	7.5	50	85	25	32
39-53	XXX	XXX	–	8	60	120	32	40
51-71	XXX	XXX	–	10	60	135	40	50
64-91	XXX	XXX	–	13	70	155	50	63
83-124	XXX	XXX	–	16.5	70	155	63	80
109-167	XXX	XXX	–	–	90	175	80	80
139-215	XXX	XXX	–	–	125	240	100	100

Suitable cartridges for twin cutter No. 236680 / 236682

Application:

23 6684 – With indexable inserts No. 236520 – 236576.
23 6685/6686 – With indexable inserts No. 236840; 236900; 236980.



Holder	24F 23 6684	24F 23 6685	24F 23 6686	24F 23 6688	Indexable insert W 83	Indexable insert W 29	ISO code indexable insert			Insert screw set		
	KOMET TwinKom® holder for twin cutter α = 80°		KOMET TwinKom® holder for twin cutter α = 90°									
	Roughing	Roughing	Roughing	Finishing	23 6684	23 6685 23 6686	23 6684	23 6685 23 6686	23 6688	23 6684	23 6685 23 6686	23 6688
24-32	(XXX)	XXX	XXX	XXX	18 – ...	18-010 18-110	SOEX 060306	WOEX 040304	CCMT 060204	239652 _6IP2 (1.0 Nm)	239652 _6IP2 (1.0 Nm)	239653 _7IP (0.9 Nm)
30-41	(XXX)	XXX	XXX	XXX	23 – ...	24-010 24-110	SOEX 07T308	WOEX 05T304	CCMT 060204	239652_8IP1 (1.3 Nm)	239652 _8IP2 (1.3 Nm)	239653 _7IP (0.9 Nm)
39-53	(XXX)	XXX	XXX	XXX	32 – ...	24-010 24-110	SOEX 090408	WOEX 05T304	CCMT 09T304	239653_15IP2 (2.8 Nm)	239652 _8IP2 (1.3 Nm)	239652 _15IP1 (2.8 Nm)
51-71	(XXX)	XXX	XXX	XXX	32 – ...	34-010 34-110	SOEX 090408	WOEX 06T304	CCMT 09T304	239653_15IP2 (2.8 Nm)	239652_10IP1 (2.8 Nm)	239652 _15IP1 (2.8 Nm)
64-91	(XXX)	XXX	XXX	XXX	44 – ...	42-010 42-110	SOEX 120508	WOEX 080404	CCMT 120404	239652 _20IP (6.3 Nm)	239653 _15IP3 (6.3 Nm)	239652 _20IP (6.3 Nm)
83-124	(XXX)	XXX	XXX	XXX	44 – ...	50-010 50-110	SOEX 120508	WOEX 100504	CCMT 120404	239652 _20IP (6.3 Nm)	239653 _15IP3 (6.3 Nm)	239652 _20IP (6.3 Nm)
109-167	XXX	XXX	XXX	XXX	44 – ...	50-010 50-110	SOEX 120508	WOEX 100504	CCMT 120404	239652 _20IP (6.3 Nm)	239653 _15IP3 (6.3 Nm)	239652 _20IP (6.3 Nm)
139-215	XXX	XXX	XXX	XXX	44 – ...	58-010 58-110	SOEX 120508	WOEX 120608	CCMT 120404	239652 _20IP (6.3 Nm)	239653 _20IP (6.3 Nm)	239652 _20IP (6.3 Nm)

KOMET® Unisix® carbide indexable inserts WOEX.. Type W29

Note:	The standard application values refer to the KUB Trigon®.
23 6860/6930 –	Do not use in the centre pocket of indexable drills!
23 7000/7050 –	Due to the special cutter geometry, the inserts can be used only for right-hand cutting KOMET KUB® indexable drill.

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	CuZn	Graphite GRP CRP					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	M	M	S	K	N	N					
23 6740				**300**	**250**	**200**	160	130											●				
23 6760/6930				**300**	**250**	**200**													●				
23 6771				**300**	**250**	**225**	**200**	**120**					**180**	**120**					●				
23 6780																**200**			●				
23 6791				**220**	**185**	**165**	**150**	**100**					160	100					●				
23 6830				**300**	**250**	**200**	**160**	**130**								200			●				
23 6840–23 6841				**300**	**250**	**200**	**160**	**130**					**160**	160	80				●			○	
23 6860				**300**	**250**	**200**							**160**	**160**	80	**200**			●				
23 6910													**160**						●			○	
23 6980	**600**	**300**	**250**														**300**	150	●			○	
23 7000–23 7050				**300**	**250**	**200**							**160**	160	**80**				●				
23 7080													**160**	**160**	**80**				●				

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Designation type W29			10-010	10-030	10-110	10-130	10-200		Type
24T 23 6760	KOMET® Unisix® indexable insert	P40	(XXX)	–	–	–	–	10	ST900
24T 23 6780		BK62	XXX	–	–	–	–	10	GG(G)
24T 23 6830		BK72	XXX	–	–	–	–	10	ST1400
24T 23 6840		BK8425	XXX	–	–	–	–	10	ST1400
24T 23 6910		BK7935	XXX	–	–	–	–	10	INOX
24T 23 6930		BK8425	–	XXX	–	–	–	10	ST900
24T 23 6980		BK7710	–	–	XXX	–	–	10	Alu; CuZn
24T 23 7000		BK8425	–	–	–	XXX	–	10	INOX
24T 23 7050		BK79	–	–	–	XXX	–	10	INOX
24T 23 7080		BK2730	–	–	–	–	XXX	10	INOX
ISO code indexable insert			WOEX 030204						
Feed f in steel < 900 N/mm²		mm/rev.	0.08						
Suitable for:			No. 236630; 236635; 236650						

Designation type W29			18-010	18-030	18-110	18-130	18-200		Type
24T 23 6760	KOMET® Unisix® indexable insert	P40	(XXX)	–	–	–	–	10	ST900
24T 23 6780		BK62	XXX	–	–	–	–	10	GG(G)
24T 23 6830		BK72	XXX	–	–	–	–	10	ST1400
24T 23 6840		BK8425	XXX	–	–	–	–	10	ST1400
24T 23 6910		BK7935	XXX	–	–	–	–	10	INOX
24T 23 6930		BK8425	–	XXX	–	–	–	10	ST900
24T 23 6980		BK7710	–	–	XXX	–	–	10	Alu; CuZn
24T 23 7000		BK8425	–	–	–	XXX	–	10	INOX
24T 23 7050		BK79	–	–	–	XXX	–	10	INOX
24T 23 7080		BK2730	–	–	–	–	XXX	10	INOX
ISO code indexable insert			WOEX 040304						
Feed f in steel < 900 N/mm²		mm/rev.	0.13						
Suitable for:			No. 236630; 236635; 236650; 236685; 236686						

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Designation type W29			24-000	24-010	24-030	24-110	24-130	24-200		Type
24T 23 6740	KOMET® Unisix® indexable insert	P25M	XXX	XXX	–	–	–	–	10	ST900
24T 23 6760		P40	–	(XXX)	–	–	–	–	10	ST900
24T 23 6771		BK6425	XXX	–	–	–	–	–	10	ST900; INOX
24T 23 6780		BK62	–	XXX	–	–	–	–	10	GG(G)
24T 23 6791		BK6440	XXX	–	–	–	–	–	10	ST900
24T 23 6830		BK72	–	XXX	–	–	–	–	10	ST1400
24T 23 6840		BK8425	–	XXX	–	–	–	–	10	ST1400
24T 23 6841		BK8425	XXX	–	–	–	–	–	10	ST1400
24T 23 6860		BK6115	(XXX)	(XXX)	–	–	–	–	10	GG(G) / ST900
24T 23 6910		BK7935	–	XXX	–	–	–	–	10	INOX
24T 23 6930		BK8425	–	–	XXX	–	–	–	10	ST900
24T 23 6980		BK7710	–	–	–	XXX	–	–	10	Alu; CuZn
24T 23 7000		BK8425	–	–	–	–	XXX	–	10	INOX
24T 23 7050		BK79	–	–	–	–	XXX	–	10	INOX
24T 23 7080		BK2730	–	–	–	–	–	XXX	10	INOX
ISO code indexable insert			WOEX 05T304							
Feed f in steel < 900 N/mm²		mm/rev.	0.14							
Suitable for:			No. 236630; 236635; 236650; 236660; 236685; 236686							

Designation type W29			34-000	34-010	34-030	34-110	34-130	34-200		Type
24T 23 6740	KOMET® Unisix® indexable insert	P25M	XXX	XXX	–	–	–	–	10	ST900
24T 23 6760		P40	–	(XXX)	–	–	–	–	10	ST900
24T 23 6771		BK6425	XXX	–	–	–	–	–	10	ST900; INOX
24T 23 6780		BK62	–	XXX	–	–	–	–	10	GG(G)
24T 23 6791		BK6440	XXX	–	–	–	–	–	10	ST900
24T 23 6830		BK72	–	XXX	–	–	–	–	10	ST1400
24T 23 6840		BK8425	–	XXX	–	–	–	–	10	ST1400
24T 23 6841		BK8425	XXX	–	–	–	–	–	10	ST1400
24T 23 6860		BK6115	(XXX)	(XXX)	–	–	–	–	10	GG(G) / ST900
24T 23 6910		BK7935	–	XXX	–	–	–	–	10	INOX
24T 23 6930		BK8425	–	–	XXX	–	–	–	10	ST900
24T 23 6980		BK7710	–	–	–	XXX	–	–	10	Alu; CuZn
24T 23 7000		BK8425	–	–	–	–	XXX	–	10	INOX
24T 23 7050		BK79	–	–	–	–	XXX	–	10	INOX
24T 23 7080		BK2730	–	–	–	–	–	XXX	10	INOX
ISO code indexable insert			WOEX 06T304							
Feed f in steel < 900 N/mm²		mm/rev.	0.15							
Suitable for:			No. 236650; 236660; 236685; 236686							

Designation type W29			42-000	42-010	42-030	42-110	42-130	42-200		Type
24T 23 6740	KOMET® Unisix® indexable insert	P25M	XXX	XXX	–	–	–	–	10	ST900
24T 23 6760		P40	–	(XXX)	–	–	–	–	10	ST900
24T 23 6771		BK6425	XXX	–	–	–	–	–	10	ST900; INOX
24T 23 6780		BK62	–	XXX	–	–	–	–	10	GG(G)
24T 23 6791		BK6440	XXX	–	–	–	–	–	10	ST900
24T 23 6830		BK72	–	XXX	–	–	–	–	10	ST1400
24T 23 6840		BK8425	–	XXX	–	–	–	–	10	ST1400
24T 23 6841		BK8425	XXX	–	–	–	–	–	10	ST1400
24T 23 6860		BK6115	(XXX)	(XXX)	–	–	–	–	10	GG(G) / ST900
24T 23 6910		BK7935	–	XXX	–	–	–	–	10	INOX
24T 23 6930		BK8425	–	–	XXX	–	–	–	10	ST900
24T 23 6980		BK7710	–	–	–	XXX	–	–	10	Alu; CuZn
24T 23 7000		BK8425	–	–	–	–	XXX	–	10	INOX
24T 23 7050		BK79	–	–	–	–	XXX	–	10	INOX
24T 23 7080		BK2730	–	–	–	–	–	XXX	10	INOX
ISO code indexable insert			WOEX 080404							
Feed f in steel < 900 N/mm²		mm/rev.	0.16							
Suitable for:			No. 236650; 236660; 236685; 236686							

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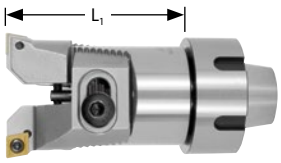
Designation type W29			50-000	50-010	50-030	50-110	50-130	50-200		Type
24T 23 6740	KOMET® Unisix® indexable insert	P25M	XXX	XXX	–	–	–	–	10	ST900
24T 23 6760		P40	–	(XXX)	–	–	–	–	10	ST900
24T 23 6771		BK6425	XXX	–	–	–	–	–	10	ST900; INOX
24T 23 6780		BK62	–	XXX	–	–	–	–	10	GG(G)
24T 23 6791		BK6440	XXX	–	–	–	–	–	10	ST900
24T 23 6830		BK72	–	XXX	–	–	–	–	10	ST1400
24T 23 6840		BK8425	–	XXX	–	–	–	–	10	ST1400
24T 23 6841		BK8425	XXX	–	–	–	–	–	10	ST1400
24T 23 6860		BK6115	(XXX)	(XXX)	–	–	–	–	10	GG(G) / ST900
24T 23 6910		BK7935	–	XXX	–	–	–	–	10	INOX
24T 23 6930		BK8425	–	–	XXX	–	–	–	10	ST900
24T 23 6980		BK7710	–	–	–	XXX	–	–	10	Alu; CuZn
24T 23 7000		BK8425	–	–	–	–	XXX	–	10	INOX
24T 23 7050		BK79	–	–	–	–	XXX	–	10	INOX
24T 23 7080		BK2730	–	–	–	–	–	XXX	10	INOX
ISO code indexable insert			WOEX 100504							
Feed f in steel < 900 N/mm²		mm/rev.	0.2							
Suitable for:			No. 236685; 236686							

Designation type W29			58-000	58-010	58-030		Type
24T 23 6740	KOMET® Unisix® indexable insert	P25M	–	XXX	–	10	ST900
24T 23 6760		P40	–	(XXX)	–	10	ST900
24T 23 6780		BK62	–	XXX	–	10	GG(G)
24T 23 6791		BK6440	XXX	–	–	10	ST900
24T 23 6830		BK72	–	XXX	–	10	ST1400
24T 23 6840		BK8425	–	XXX	–	10	ST1400
24T 23 6841		BK8425	XXX	–	–	10	ST1400
24T 23 6860		BK6115	–	(XXX)	–	10	GG(G) / ST900
24T 23 6910		BK7935	–	XXX	–	10	INOX
24T 23 6930		BK8425	–	–	XXX	10	ST900
ISO code indexable insert			WOEX 120608				
Feed f in steel < 900 N/mm²		mm/rev.	0.2				
Suitable for:			No. 236685; 236686				

Twin cutter heads ∅ 23.5 – 153.0 mm.

The dual toolholder head consists of a base body and indexable insert holder.
Cutters individually adjustable.

Application: For boring out exiting holes.



23 7609

Twin cutter head ER

Integral taper allows simple connection to ER collet chucks.

Connection		ER25	ER32	ER40
29W 23 7609	Twin cutter head ER	XXX	XXX	XXX
suitable indexable insert		CC..09T3..	CC..09T3..	CC..1204..
L_1	mm	65	75	85
Boring range ∅	mm	39.5 – 51.1	49.5 – 67.1	65.5 – 87.1
Insert screw		219805	219805	219864

Twin cutter head HW

Connection to the HW port.
With synchronised spindle on request.

23 7610

Connection		HW20	HW25	HW32	HW40	HW50	HW63	HW80
20N 23 7610	Twin cutter head HW	XXX	XXX	XXX	XXX	XXX	XXX	XXX
suitable indexable insert		CC..0602..	CC..0602..	CC..09T3..	CC..09T3..	CC..1204..	CC..1204..	CC..1204..
L_1	mm	45	56	66	75	90	110	140
Boring range ∅	mm	23.5 – 30.5	29.5 – 40.1	39.5 – 50.5	49.5 – 66.5	65.5 – 87.5	86.5 – 115.5	114.5 – 153
Insert screw		219830	219830	219805	219805	219864	219864	219864

Micro-boring systems for Ø 0.3 - 7.1 mm / 19.1 mm

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 67 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	CuZn	Graphite GRP CRP	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	M	M	S	K	N	N						
23 7621	240	240	240	180	210	170	100	90	80	70	60	110	90	40	150	290	100	●	●	●	○		

Micro-boring heads with plain shank

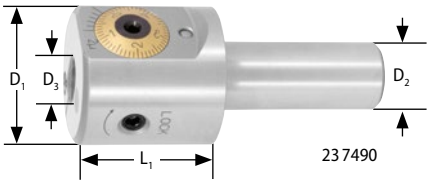
Adjustment accuracy 0.01 mm per graduation / with vernier 0.002 mm on the Ø.

23 7493/7498 – **Digital** boring heads with **additional precise reading facility** on **0.001 mm in Ø** via **digital display unit No. 237601** (order separately).
Ø adjustment with minimum backlash thanks to direct measuring system.

Application: With cutting insert No. 237621, adapter No. 237624 and insert No. 237625.

Note: Digital display unit see page 165.

29W	**23 7490**	Micro-boring head **Ø 0.3 - 7.1 mm:**	XXX
29W	**23 7493**	Micro-boring head **Digital Ø 0.3 - 7.1 mm**	XXX
Ø D_1		mm	25
Ø D_3		mm	4
L_1		mm	25
Ø D_2		mm	10



23 7490

29W	**23 7495**	Micro-boring head **Ø 0.3 - 19.1 mm:**	XXX
29W	**23 7498**	Micro-boring head **Digital Ø 0.3 - 19.1 mm**	XXX
Ø D_1		mm	32
Ø D_3		mm	7
L_1		mm	32
Ø D_2		mm	16

23 7493

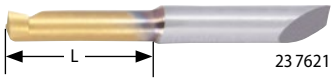
Cutter insert/reducer sleeve

Application: For micro-boring heads.

Size 0,3–3,9 – **Shank - Ø 4 mm** for direct fitting in head No. 237490 and 237493.

Size 5,2–6,9 – **Shank - Ø 7 mm** for direct fitting in head No. 237495 and 237498.

Size 7-4 – For micro-boring heads No. 237495 and No. 237598. Reduction of the arbor **from 7 mm to 4 mm**, for use of cutter inserts No. 237621 size 0.3 – 3.9.



23 7621

Ø		mm	0,3	0,6	1,0	2,2	3,2	3,9	5,2	6,2	6,9
29W	**23 7621**	Cutter insert	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
Shank Ø		mm	4	4	4	4	4	4	7	7	7
L		mm	1.2	2.5	4	6	10.2	15.2	20.3	20.3	25.4
Boring range Ø		mm	0.3 – 0.7	0.6 – 1.1	1 – 2.3	2.2 – 3.3	3.2 – 4.3	3.9 – 7.1	5.2 – 6.3	6.2 – 7.3	6.9 – 12.1

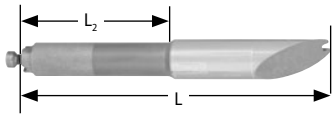
Type		7-4
29W	**23 7626**	Reducer sleeve	XXX

23 7626

Adapter / insert

Application: For micro-boring heads No. 237495 and No. 237498.
With adaptor allows inserts No. 237625.
Boring range Ø 6.9 – 19.1 mm.

Ø D_{min}		mm	6,9	9,9
29W	**23 7624**	Adapter	XXX	XXX
Type			D07	D10
Shank Ø		mm	7	
L_2		mm	30	35
L		mm	56	61
Boring range Ø		mm	6.9 – 10.1	9.9 – 19.1



23 7624

Ø D_{min}		mm	6,9	7,9	8,9	9,9	11,9	13,9
29W	**23 7625**	Insert	XXX	XXX	XXX	XXX	XXX	XXX
for type			D07	D07	D07	D10	D10	D10
maximum bore depth		mm	30	30	30	35	35	35
Boring range Ø		mm	6.9 – 8.1	7.9 – 9.1	8.9 – 10.1	9.9 – 12.1	11.9 – 14.1	13.9 – 19.1

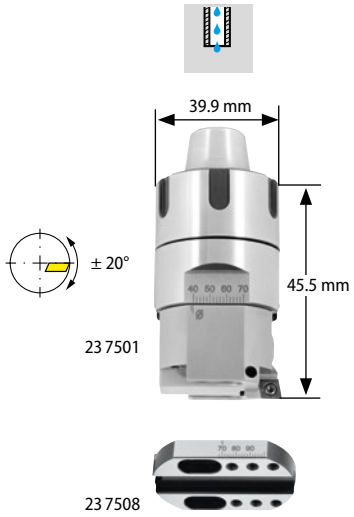
23 7625

Garant Fine boring head ER Ø 39.9-70.1 mm (100.1 mm)

The Monoblock System consists of a **boring tool with an integral taper** which is simply screwed on to the existing **ER25 collet chuck.**
Quick rough adjustment. **Can be extended with the bridge** No. 237508 to Ø 100.1 mm.

Application: Adjustment accuracy 0.01 mm on the Ø. Spindle nose with suitable standard ISO insert type **CC..0602.**
Supplied with: With indexable insert No. 260052 size CU7010.
Spare part: Insert screw No. 237606 size 1.
Recommendation: Best with indexable inserts No. 237695 and 237696.

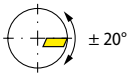
Note:	During the extraction cycle ensure cutting edge orientation ±20°!



29W **23 7501**	Fine boring head ER25 **Ø 39.9 – 70.1 mm**	XXX
29W **23 7508**	Bridge **Ø 69.9 – 100.1 mm**	XXX

Garant Precision boring sets ER

- **Adjustment accuracy: 0.01 mm per graduation. Adjustment accuracy 0.002 mm on the Ø via vernier.**
- At the 0 position, without tool, balanced to Q2.5 / 6000 rpm.
- Max. speed 10,000 rpm.
- Cooling using a coolant nozzle, optimum coolant pressure 10 – 20 bar, minimum 5 bar.
- Slides radially adjustable with clamp.



Note:	During the extraction cycle ensure cutting edge orientation ±20°!

ER25 Ø 39.9–100.1 mm

For Ø range 39.9 - 100.1 mm. **The modular ER precision boring tool can be adapted directly on to the ER25 collet chuck.** Supplied in an ABS plastic case.
Spare part: Insert screw No. 239653 (8IP; 1.28 Nm) for cartridge No. 237517 size 1 and 2.

Note:	Suitable indexable insert **CCGT0602..** (for instance No. 237695 / 237696), please order these separately.

Connection		ER25
21F **23 7502**	Precision boring set **Ø 39.9 – 100.1 mm**	XXX
Supplied with: 1 precision boring head		ER25
1 each cartridge		No. 237517 size 1 for Ø 39.9 – 57 mm No. 237517 size 2 for Ø 57 – 100.1 mm
1 bridge		No. 237518 size 1 for Ø 70.1 – 100.1 mm
1 flag wrench		No. 625920 size 8IP
1 hexagon L-wrench		No. 627310 size 4
2 socket-head screws		No. 237522 size M5 × 12
2 plain washers		No. 237523
2 disc springs		No. 237524

23 7502

ER40 Ø 9.75–152.1 mm

For Ø range 9.75 - 152.1 mm. **The modular ER precision boring tool can be adapted directly on to the ER40 collet chuck.** Supplied in an ABS plastic case.
Spare part: Insert screw No. 239652 (8IP3; 1.28 Nm), for boring bar No. 237521 size 1.
Insert screw No. 239653 (8IP; 1.28 Nm), for boring bar No. 237521 size 2 and cartridge No. 237517 size 1 and 2.
Insert screw No. 239653 (10IP1; 2.8 Nm) for cartridge No. 237517 size 3.

Note:	Suitable indexable insert **CCGT0602..** and **CCGT09T3..** (for instance No. 237695 / 237698), please order these separately.

Connection		ER40
21F **23 7509**	Precision boring set **Ø 9.75 – 152.1 mm**	XXX
Supplied with: 1 precision boring head		ER40
1 each cartridge		No. 237517 size 1 for Ø 25 – 37 mm No. 237517 size 2 for Ø 37 – 89 mm No. 237517 size 3 for Ø 89 – 152.1 mm
1 bridge		No. 237518 size 2 for Ø 101.1 – 152.1 mm
1 flag wrench		No. 237519 for Ø 25 – 63 mm (90 mm)
1 hexagon L-wrench		No. 237520 for Ø 63 – 152.1 mm
2 socket-head screws		No. 237521 size 1 for Ø 9.75 – 18 mm (50 mm) No. 237521 size 2 for Ø 18 – 25 mm (77 mm)
1 each flag wrench		No. 625920 size 8IP No. 625920 size 10IP
2 disc springs		No. 627424 size 4
2 socket-head screws		No. 237522 size M5×12
2 plain washers		No. 237523
2 disc springs		No. 237524

23 7509

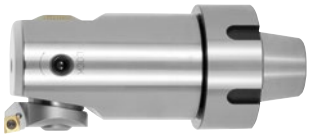
Micro-adjustable head for ∅ 23.9 – 153.1 mm

Micro-adjustable head ER

With integral taper. **Simple connection to ER collets.**
Adjustment accuracy 0.002 mm on the ∅.

Application: Preferably with indexable insert No. 237695 – 237698.

Note: During the extraction cycle ensure cutting edge orientation ±20°!



23 7548

Connection		ER25	ER32	ER40
29W 23 7548	Micro-adjustable head ER	XXX	XXX	XXX
suitable indexable insert		CC..0602..	CC..0602..	CC..09T3
Spindle range	mm	39.9 – 51.1	50.9 – 67.1	66.9 – 87.1
L_1	mm	65	75	85
Insert screw		237606 size 1	237606 size 1	237606 size 2

Micro-adjustable head HW

23 7600 – **Adjustment accuracy 0.002 mm** on the ∅ **via vernier.**
23 7602 – **Adjustment accuracy 0.001 mm** on the ∅ **using display unit** No. 237601.

Application: Best with indexable inserts No. 237695 – 237698.
With indexable inserts No. 237651 – 237656.

23 7600

23 7602

Connection		HW20	HW25	HW32	HW40	HW50	HW63	HW80
29W 23 7600	Micro-adjustable head HW	XXX	XXX	XXX	XXX	XXX	XXX	XXX
29W 23 7602	Digital micro-adjustable head HW	XXX	XXX	XXX	XXX	XXX	XXX	XXX
suitable indexable insert		CC..0602..	CC..0602..	CC..0602..	CC..0602..	CC..09T3..	CC..09T3..	CC..09T3..
Spindle range	mm	23.9 – 31.1	30.9 – 40.1	39.9 – 51.1	50.9 – 67.1	66.9 – 87.1	86.9 – 116.1	115.9 – 153.1
L_1	mm	45	56	66	75	90	110	140
Insert screw		237606 size 1				237606 size 2		

Precision boring system ER plus / HW63 ∅ 9.75-101.1 mm (152.1 mm)

23 7512 – **The ER plus precision boring tool can be adapted directly on to the ER40 collet chuck.**

Application:

23 7512 – For boring bars with shank ∅ 16 mm and insert toolholder.
Can be extended with adapter and insert toolholder to ∅ 152.1 mm.
Adjustment accuracy 0.01 mm / with vernier 0.002 mm on the ∅.
Boring bars with suitable standard ISO insert type **CC..0602.**
Insert toolholders with suitable standard ISO insert type **CC..09T3.**

Spare part:

23 7512 – For No. 237630 – 237642: Insert screw No. 219830.
For No. 237645; 237531; 237532: Insert screw No. 219805.

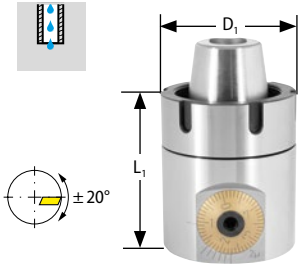
Recommendation:

23 7512 – Preferably with indexable inserts No. 237695 – -237698

Note:
23 7512 Size ER40 – During the extraction cycle, ensure cutting edge orientation ±20°!

23 7512

Connection		ER40	HW63
29W 23 7512	Precision boring set ∅ 9.75 – 101.1 mm	XXX	XXX
Supplied with: 1 fine boring head		No. 237513 ER40	No. 237513 HW63
1 pc. each boring bar (max. boring length)		No. 237630 boring bar ∅ 9.75 – 20.1 mm (30 mm); No. 237634 boring bar ∅ 19.75 – 30.1 mm (72 mm); No. 237640 boring bar ∅ 29.75 – 48.1 mm (85 mm); No. 237642 boring bar ∅ 47.75 – 88.1 mm (85 mm).	
1 insert toolholder		No. 237645 for ∅ 87.75 – 101.1 mm (with adapter No. 237534 up to ∅ 114.1 mm).	
1 each of insert		No. 260052 size CU7010 (or use CC..0602); No. 260058 size CU7010 (or use CC..09T3).	



23 7513

Connection		ER40	HW63
29W 23 7513	Fine boring head ∅ 9.75 – 152.1 mm	XXX	XXX
∅ D_1	mm	63	
L_1	mm	50.5	
29W 23 7531	Insert toolholder for CC..09T3 ∅ 105.75 - 119.1 mm (up to 132.1 mm with adapter)		XXX
29W 23 7532	Insert toolholder ∅ 125.75 - 139.1 mm (up to 152.1 mm with adapter)		XXX
29W 23 7534	Adapter F = 6.5 mm		XXX

23 7531 23 7532 23 7534

Digital precision boring system HW63 Ø 9.75 – 101.1 mm (152.1 mm)

23 7515 – With **digital fine boring head** No. 237516, **digital display unit** No. 237601, boring bars and accessories in the case.
For boring bars with shank Ø 16 mm and insert toolholder.
Can be extended with adapter and insert toolholder to Ø 152.1 mm.
Adjustment accuracy 0.01 mm / with vernier 0.002 mm on the Ø.
With digital display unit, 0.001 mm on the Ø.
Boring bars with suitable standard ISO insert type **CC..0602.**
Insert toolholder with suitable standard ISO insert type **CC..09T3.**

Spare part:

23 7515 – For No. 237630 – 237642: Insert screw No. 219830.
For No. 237645; 237531; 237532: Insert screw No. 219805.

Recommendation:

23 7515 – Best with inserts no. 237695 - 237698.

Note:

23 7515 – Insert toolholder with adapter (No. 237531; 237532; 237534) for expansion to 152.1 mm on the Ø: For individual products see precision boring set 237512.

23 7515

Connection		HW63
29W **23 7515**	Precision boring set **Ø 9.75 – 101.1 mm**	XXX
Supplied with: 1 fine boring head		237516 HW63
1 pc. each boring bar (max. boring length)		No. 237630 boring bar Ø 9.75 – 20.1 mm (30 mm); No. 237634 boring bar Ø 19.75 – 30.1 mm (72 mm); No. 237640 boring bar Ø 29.75 – 48.1 mm (85 mm); No. 237642 boring bar Ø 47.75 – 88.1 mm (85 mm)
1 insert toolholder		No. 237645 for Ø 87.75 – 101.1 mm (with adapter No. 237534 up to Ø 114.1 mm)
1 each of insert		No. 260052 CU7010 (or use CC..0602); No. 260058 CU7010 (or use CC..09T3)

Connection			HW63
29W **23 7516**	Fine boring head **Ø 9.75 – 152.1 mm**		XXX
Ø D_1		mm	63
L_1		mm	50.5

Precision boring systems for Ø 9.75-164 mm (320 mm)

23 7541 – For **Ø 9.75 – 164 mm**, with fine boring head No. 237546, boring bar and accessories in a case.
Can be extended with the bridge No. 237560 to **Ø 320 mm**.
Adjustment accuracy 0.01 mm per graduation / with vernier 0.002 mm on the Ø.

Application:

23 7541 – For boring bars with shank Ø 16 mm and precision boring bridges.
Boring bars / insert toolholder with suitable standard ISO insert type **CC..0602.**

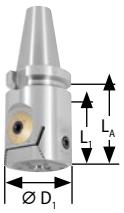
Spare part:

23 7541/7546 – Insert screw No. 219830.

Recommendation:

23 7541 – Best with indexable inserts No. 237695 and 237696.

23 7541



Connection			HW63	SK40	BT40	HSK63
29W **23 7541**	Precision boring set **Ø 9.75 – 164 mm**		XXX	XXX	XXX	XXX
Supplied with: 1 fine boring head			No. 237546 HW63	No. 237546 SK40	No. 237546 BT40	No. 237546 HSK63
1 each boring bar (max. boring length)			No. 237630 Ø 9.75 – 15.1 mm (30 mm), No. 237632 Ø 14.75 - 20.1 mm (51 mm); No. 237634 Ø 19.75 – 25.1 mm (72 mm), No. 237636 Ø 24.75 - 30.1 mm (82 mm); No. 237640 Ø 29.75 – 48.1 mm (85 mm), No. 237642 Ø 47.75 – 88.1 mm (85 mm).			
1 bridge			No. 237647 for Ø extension of 86 – 164 mm.			
1 insert toolholder for the bridge			No. 237564 06			
1 insert			No. 260052 size CU7010 (CCMT 060204)			

Connection			HW63	SK40	BT40	HSK63
29W **23 7546**	Fine boring head **Ø 9.75 – 320 mm**		XXX	XXX	XXX	XXX
Ø D_1		mm	63			
L_1		mm	–	81	81	72
L_A		mm	60	91	91	96

29W **23 7560**	Bridge for fine boring head range **Ø 162 – 320 mm**		XXX

23 7560

23 7564

Type		06	09
29W **23 7564**	Insert toolholder for bridges	XXX	XXX

Garant Precision boring systems for Ø 9.75 – 30.1 mm and 88.1 mm

23 7581 – **For Ø 9.75 – 30.1 mm**
23 7586 – **For Ø 9.75 – 88.1 mm**
23 7581/7586 – With fine boring head No. 237591, boring bars and accessories in a case.
Adjustment accuracy 0.01 mm per graduation / with vernier 0.002 mm on the Ø.
Ø adjustment with minimum backlash.

Application: For boring bars with shank Ø 16 mm and precision boring bridges.
With ISO indexable inserts **type CC..0602..**.

Spare part:
23 7581/7586 – Insert screw No. 219830.

Recommendation: Best with indexable inserts No. 237695 and No. 237696.

23 7586

Connection		HW63	SK40	BT40	HSK63
29W 23 7581	Precision boring set **Ø 9.75 – 30.1 mm**	XXX	XXX	XXX	XXX
29W 23 7586	Precision boring set **Ø 9.75 – 88.1 mm**	XXX	XXX	XXX	XXX
Supplied with: 1 fine boring head		No. 237591 HW63	No. 237591 SK40	No. 237591 BT40	No. 237591 HSK63
1 each boring bar (max. boring length)		No. 237630 Ø 9.75 – 15.1 mm (30 mm), No. 237632 Ø 14.75 - 20.1 mm (51 mm); No. 237634 Ø 19.75 – 25.1 mm (72 mm), No. 237636 Ø 24.75 - 30.1 mm (82 mm).			
1 each boring bar (max. boring length) (23 7586)		No. 237640 Ø 29.75 – 48.1 mm (85 mm), No. 237642 Ø 47.75 – 88.1 mm (85 mm).			
1 insert toolholder for the bridge		No. 237565			
1 insert		No. 260052 size CU7010 (CCMT 060204)			

Connection		HW63	SK40	BT40	HSK63
29W 23 7591	Fine boring head **Ø 9.75 – 88.1 mm**	XXX	XXX	XXX	XXX
Ø D_1	mm	55			
L_1	mm	–	69	63	72
L_A	mm	50	90	90	95

Garant Digital precision boring systems for Ø 9.75 – 30.1 mm and 88.1 mm

23 7566 – **For Ø 9.75 – 30.1 mm**
23 7567 – **For Ø 9.75 – 88.1 mm**
23 7566/7567 – With **digital fine boring head** No. 237568, **digital display unit** No. 237601, boring bars and accessories in a case.
Adjustment accuracy 0.01 mm per graduation / with vernier 0.002 mm on the Ø.
With additional precise reading facility to 0.001 mm in Ø.
Ø adjustment with minimum backlash thanks to direct measuring system.

Application:
23 7566/7567 – For boring bars with shank Ø 16 mm and precision boring bridges. With ISO indexable inserts **type CC..0602..**.

Spare part:
23 7566/7567 – Insert screw No. 219830.

Recommendation:
23 7566/7567 – Best with indexable inserts No. 237695 and No. 237696.

23 7601

23 7567

Connection		HW63	SK40	BT40	HSK63
29W 23 7566	Precision boring set **Ø 9.75 – 164 mm**	XXX	XXX	XXX	XXX
29W 23 7567	Digital precision boring set with fine boring head **Ø 9.75 – 88.1 mm**	XXX	XXX	XXX	XXX
Supplied with: 1 fine boring head		No. 237568 HW63	No. 237568 SK40	No. 237568 BT40	No. 237568 HSK63
1 each boring bar (max. boring length)		No. 237630 Ø 9.75 – 15.1 mm (30 mm), No. 237632 Ø 14.75 - 20.1 mm (51 mm); No. 237634 Ø 19.75 – 25.1 mm (72 mm), No. 237636 Ø 24.75 - 30.1 mm (82 mm).			
1 each boring bar (max. boring length) (23 7567)		No. 237640 Ø 29.75 – 48.1 mm (85 mm), No. 237642 Ø 47.75 – 88.1 mm (85 mm).			
1 insert toolholder for the bridge		No. 237565			
1 insert		No. 260052 size CU7010 (CCMT 060204)			

Connection		HW63	SK40	BT40	HSK63
29W 23 7568	Fine boring head **Ø 9.75 – 88.1 mm**	XXX	XXX	XXX	XXX
Ø D_1	mm	55			
L_1	mm	–	70	63	69
L_A	mm	50	90	90	95

Garant HW63 precision boring system for Ø 86 – 302 mm (402 mm)

23 7570 – Complete precision boring set for **Ø 86 - 302 mm**,
with fine boring head no. 237571, insert toolholder and accessories in a case.
Can be extended with indexable insert holder no. 237573 242-402 **up to Ø 402 mm.**
Adjustment accuracy 0.01 mm per graduation/with vernier 0.002 mm on the Ø.

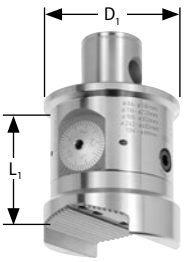
Application:
23 7570/7573 – Insert toolholders with suitable standard ISO insert type CC..09T3..

Spare part:
23 7570/7573 – Insert screw No. 219805.

Recommendation:
23 7570/7573 – Best with indexable inserts No. 237697 and 237698.

23 7570_HW63

Connection		HW63
29W **23 7570**	Precision boring set **Ø 86 – 302 mm**	XXX
Supplied with: 1 fine boring head		237571 HW63
1 each insert toolholder		No. 237573 86-138 for Ø 86– 138 No. 237573 136-220 for Ø 136– 220 No. 237573 188-302 for Ø 188– 302
1 each support		No. 237574 86 for No. 237573 86-138 No. 237574 136 for No. 237573 136-220, 188-302 and 242-402
1 each pressure pad		No. 237575 86 for No. 237573 86-138 No. 237575 136 for No. 237573 136-220, 188-302 and 242-402
1 insert		No. 260058 CU7010 (or use CC.. 09T3)



23 7571_HW63

Connection			HW63
29W **23 7571**	Fine boring head **Ø 86 – 402 mm**		XXX
Ø D_1		mm	80
L_1		mm	89.5

		242-402
29W **23 7573**	Insert toolholders for spindle range **Ø 242 – 402 mm**	XXX

23 7573_242-402

Garant Digital display unit for precision boring heads

External digital measuring instrument for GARANT precision boring heads. Electronics and power supply are contained within the display unit, so it can be installed in a **protected area outside** the machining centre. **Simple and secure attachment** with permanent magnet.

Advantage: **Suitable for all** GARANT digital boring heads.
No electronics or battery in the boring head, therefore compact installation can be performed.

Application: **To 0.001 mm (inch)** precise reading **on the Ø.**
Very high repetition accuracy and zero-play fine adjustment due to the **direct travel measurement system** guarantee **optimum measurement reliability and process reliability.**

Supplied with: With spare battery.

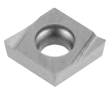
23 7601

29W **23 7601**	Display unit **digital**	XXX

Garant Indexable insert for precision boring systems

Polished inserts for **controlled chip breakage** during precision boring work with small oversize.
Size CU3515 – General purpose for a broad range of applications.
Size HB3010 – Especially for hardened steels, even for stainless.

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	K						
CU3515	**600**	**350**	**250**	**250**	**250**	**220**	**200**	**180**						**120**	**120**		**160**	●		●	○		○
HB3010	400	300	220	200	185	**185**	**160**	**150**	**125**	**100**	**80**			**120**	**120**		160			●	○		○
HB7015	400	300	220	200	185	**185**	**160**	**150**						**120**	120		160			●	○		○



Grade			CU3515	HB3010	HB7015	
21F **23 7695**	CCGT 060202L		XXX	XXX	XXX	**10**
21F **23 7696**	CCGT 060204L		XXX	XXX	–	**10**
21F **23 7697**	CCGT 09T302L		XXX	XXX	XXX	**10**
21F **23 7698**	CCGT 09T304L		XXX	XXX	–	**10**
Chip breaker			US	SS	SS	
f		mm/rev.	0.05 – 0.2			

Arbors, extensions and reducers for HW interface

Reducer sleeve Ø 16 mm to 7 mm

Shank Ø 16 mm

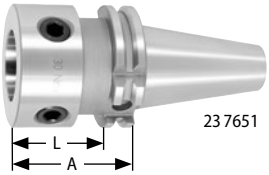
Application: For micro-boring heads.
For indexable inserts and adapters in Ø 7 mm. In connection with boring heads No. 237513; 237546; 237568 and 237591.

23 7626

Type		16-7
29W 23 7626	Reducer sleeve	XXX

Arbors HW

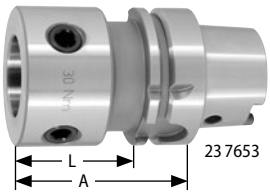
Form ADB | DIN 69871



23 7651

Connection			HW20	HW25	HW32	HW40	HW50	HW63	HW80
21F 23 7651	Arbor	SK 40	XXX	XXX	XXX	XXX	XXX	XXX	–
21F 23 7652		SK 50	–	–	–	–	XXX	XXX	XXX
L		mm	27	27	27	27	27	47	27
Dimension A		mm	46	46	46	46	46	66	46

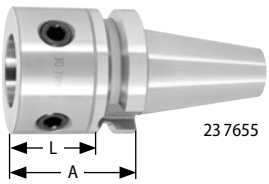
Form A | DIN 69893



23 7653

Connection			HW20	HW25	HW32	HW40	HW50	HW63	HW80
21F 23 7653	Arbor	HSK-A 63	XXX	XXX	XXX	XXX	XXX	XXX	–
21F 23 7654		HSK-A 100	–	–	–	–	XXX	XXX	XXX
L (23 7653)		mm	16	16	22	29	39	54	–
L (23 7654)		mm	–	–	–	–	36	51	51
Dimension A		mm	42	42	48	55	65	80	80

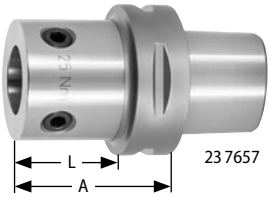
Form ADB | JIS B6339



23 7655

Connection			HW20	HW25	HW32	HW40	HW50	HW63	HW80
21F 23 7655	Arbor	BT 40	XXX	XXX	XXX	XXX	XXX	XXX	–
21F 23 7656		BT 50	–	–	–	–	XXX	XXX	XXX
L		mm	27	27	27	27	27	37	37
Dimension A (23 7655)		mm	54	54	54	54	54	64	–
Dimension A (23 7656)		mm	–	–	–	–	65	75	75

ISO 26623-1

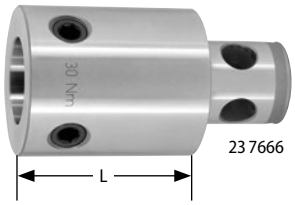


23 7657

Connection			HW20	HW25	HW32	HW40	HW50	HW63	HW80
21F 23 7657	Arbor	PSC 63	XXX	XXX	XXX	XXX	XXX	XXX	XXX
Length L		mm	32	32	32	43	43	–	–
Overhang dimension A		mm	54	54	54	65	65	80	80

Extensions HW

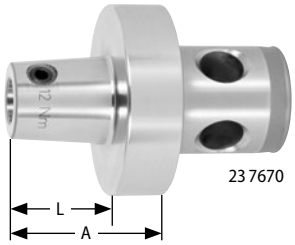
Connection		HW20	HW25	HW32	HW40	HW50	HW63	HW80
29W 23 7666	Extension short	XXX	XXX	XXX	XXX	XXX	XXX	XXX
29W 23 7668	Extension long	XXX	XXX	XXX	XXX	XXX	XXX	XXX
L (23 7666)	mm	25	30	40	50	50	75	100
L (23 7668)	mm	35	45	60	80	70	135	180



23 7666

Reducers HW

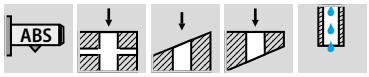
Connection		HW20	HW25	HW32	HW40	HW50
29W 23 7670	Reduction HW50	XXX	XXX	XXX	XXX	–
29W 23 7672	Reduction HW63	XXX	XXX	XXX	XXX	XXX
L (23 7670)	mm	28	28	28	28	–
L (23 7672)	mm			32		
Dimension A (23 7670)	mm	44	44	44	44	–
Dimension A (23 7672)	mm			50		



23 7670

KOMET® Micro-adjustable drilling head B301 and precision boring cartridge M302

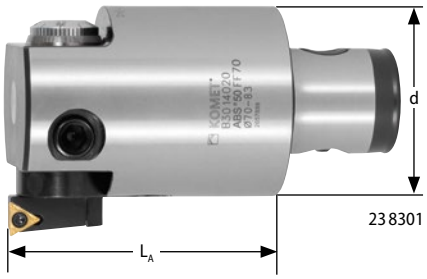
Micro-adjustable drilling head



With ABS® connection B301 and accepts M302 precision turning cartridge.
The smallest adjustment is 0.002 mm on the ∅ using the vernier. Central coolant supply to the cutting edge.

Application: **For bores from ∅ 29.5 to 199 mm.**
For high precision setting, turning cartridge can be adjusted after clamping.

Note:	Please order the suitable precision cartridge No. 238310 (M302) and indexable inserts (see group 26) separately.



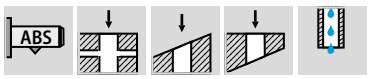
∅ D_{min} mm	24B 23 8301 KOMET® micro-adjustable drilling head **B301**	Spindle range mm	L_A mm	ABS® ∅ d	Application	Insert screw set
29,5	XXX	29.5 – 36	50	25	238310_10	249900_SW3
35,5	XXX	35.5 – 42	50	25	238310_10	249900_SW3
39	XXX	39 – 45	60	32	238310_20	249900_SW4
44	XXX	44 – 50	60	32	238310_20	249900_SW4/10
47	XXX	47 – 57	60	40	238310_30	249900_SW5
56	XXX	56 – 66	60	40	238310_30	249900_SW5
58	XXX	58 – 71	70	50	238310_40	249900_SW6
70	XXX	70 – 83	70	50	238310_40	249900_SW6
79	XXX	79 – 94	70	63	238310_50	249900_SW8
93	XXX	93 – 108	70	63	238310_50	249900_SW8
100	XXX	100 – 121	90	80	238310_60	249900_SW10
120	XXX	120 – 141	90	80	238310_60	249900_SW10
138	XXX	138 – 159	90	100	238310_70	249900_SW10/30
158	XXX	158 – 179	90	100	238310_70	249900_SW10
178	XXX	178 – 199	90	100	238310_70	249900_SW10/30

Precision boring cartridge

Type	24J 23 8310 KOMET® precision cartridge **M302**	suitable for micro-adjustable drilling head 238301	S mm	L_1 mm	∅ D_1 mm	ISO code indexable insert	Pack of insert screws
10	XXX	29.5; 35.5	3.5	28.5	10	TO. X 06T1..	239653_6IP
20	XXX	39; 44	3.5	37.5	12	TO. X 06T1..	239653_6IP
30	XXX	47; 56	5	45	16	TO. X 0902..	239653_8IP3
40	XXX	58; 70	7	56	20	TO. X 0902..	239653_8IP7
50	XXX	79; 93	8	77.5	25	TO. X 1403..	239653_10IP
60	XXX	100; 120	11	97	32	TO. X 1403..	239653_10IP
70	XXX	138; 158; 178	11	131	32	TO. X 1403..	239653_10IP

KOMET® Micro-adjustable drilling head system M03Speed µm-accurate with balancing Ø 24.8 to 206.0 mm

Micro-adjustable drilling head

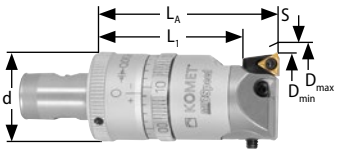


- Dynamic balance in the slide for highest speeds.
- Modular system structure.
- Fine adjustment without additional clamping.
- With ABS® connection for highest changeover accuracy.
- Quick rough adjustment by adjusting the lathe tool.
- Internal coolant supply directed to the cutting edge.
- Smallest adjustment steps in the µm range, within a fine adjustment range of 0.25 - 0.6 mm on the Ø, depending on the turning range.
- Fine adjustment steps of 0.002 mm per graduation in Ø.
- High resolution ensures problem-free adjustment / readability **without** a vernier.

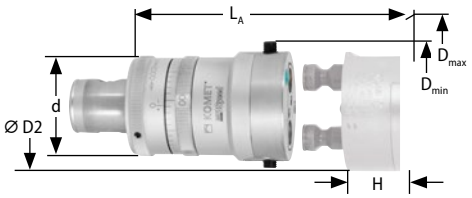
Application:

Size 38–100 – In combination with replaceable bridge No. 238372.

Note: Additional insert holders, e.g. for reverse machining and with other angles = 15°, 30°, 45° etc. available on short lead times.
Please order change-over adapters, cartridges, and indexable inserts separately.



23 8370_24.8–29



23 8370_38–100

Ø D_{min} mm	241 23 8370 KOMET® M03Speed micro-adjustable drilling head	Spindle range mm	L_1 mm	ABS® Ø d	Cutter circle Ø D2 forwards machining mm	S mm	Fine adjustment in Ø mm	maximum speed rpm	Blade carrier	Change-over adapter
24,8	XXX	24.8 – 33	39.9	25	24.5	4.5	0.25	40000	238355_24.8	–
29	XXX	29 – 39	39.9	25	26	5	0.4	40000	238355_29	–
38	XXX	38 – 63	–	32	Ø 3.2	–	0.4	31000	238374_38-50	238372 size 38 and 50
62	XXX	62 – 103	–	50	55	–	0.6	18500	238374_62-82	238372 size 62 and 82
100	XXX	100 – 206	–	63	85	–	0.6	11500	238374_100-166	238372 size 100; 128 and 166

Replaceable bridge

23 8372

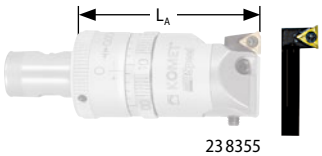
Ø D_{min} mm	241 23 8372 KOMET® replaceable bridge for M03Speed	Boring range Ø mm	H mm	Cutter circle Ø D2 forwards machining mm	S mm	maximum speed rpm	Blade carrier	Micro-adjustable drilling head
38	XXX	38 – 51	17.5	Ø 3.2	6.5	31000	238374_38-50	238370_38
50	XXX	50 – 63	17.5	Ø 3.5	6.5	24000	238374_38-50	238370_38
62	XXX	62 – 83	23	55	10	18500	238374_62-82	238370_62
82	XXX	82 – 103	23	71	10.5	15000	238374_62-82	238370_62
100	XXX	100 – 130	26	85	15	11500	238374_100-166	238370_100
128	XXX	128 – 169	26	109	20	10000	238374_100-166	238370_100
166	XXX	166 – 206	26	166	20.5	8000	238374_100-166	238370_100

Cartridges

Note:

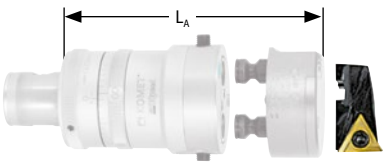
23 8374 – Only for use in conjunction with replaceable bridge No. 238372.

suitable for M03 Size	241 23 8355 KOMET® cartridge 90° for M03Speed Forwards	L_A mm	ISO code indexable insert	Pack of insert screws	Micro-adjustable drilling head
24,8	XXX	50	TOHX 06T1..	239653_6IP1	238370_24.8
29	XXX	50	TOHX 06T1..	239653_6IP1	238370_29



23 8355

suitable for M03 Size	241 23 8374 KOMET® cartridge 90° for M03Speed Forwards	L_A mm	ISO code indexable insert	Pack of insert screws	Change-over adapter
38-50	XXX	81	TOHX 06T1..	239653_6IP1	238372 size 38 and 50
62-82	XXX	103	TOHX 0902..	239653_8IP4	238372 size 62 and 82
100-166	XXX	106	TOHX 0902..	239653_8IP4	238372 size 100; 128 and 166



23 8374

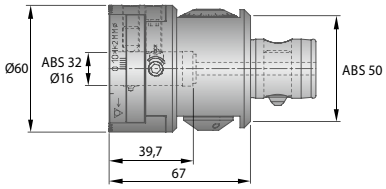
KOMET® MicroKom® hi.flex precision boring system Ø 6 – 125 mm

- Adjustment accuracy: 0.01 mm per graduation.
  Adjustment accuracy 0.002 mm Ø using the vernier for adjustments up to 5 mm radial.
- Balanced at the 0-position.

Application:

23 8390 –
- Ø 6 – 25 mm with No. 239925.
- Ø 25 – 44 mm with No. 239923 and 239920.
- Ø 44 – 63 mm with No. 239923 and 239921.
- Ø 63 – 93 mm with No. 239921.
- Ø 90 – 125 mm with No. 239922 and 239921.

23 8390

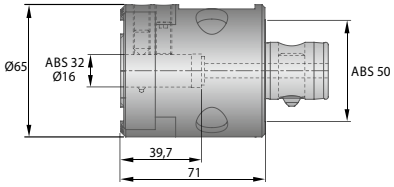


Boring range Ø	mm	6-125
240 23 8390	KOMET MicroKom® hi.flex precision boring set	XXX
240 23 8391	KOMET MicroKom® hi.flex precision boring head	XXX
Spindle range (23 8391)	mm	6 – 125
Supplied with: 1 precision boring head (23 8390)		No. 238391 ABS50® Ø 6 – 125 mm
1 each cartridge (23 8390)		No. 239920 No. 239921
1 bridge (23 8390)		No. 238395 size 90 – 125
1 serrated body (23 8390)		No. 239923
1 packing piece (23 8390)		No. 239924
1 each boring bar (23 8390)		No. 239925 size 6 – 8; size 8 – 12; size 12 – 18; size 18 – 25
2 indexable inserts (23 8390)		WOHX 02T001 BK6440 no. W00 04120.016440
4 each indexable inserts (23 8390)		TOGX 06T102 BK60 No. W57 04140.0260 TOGX 090204 BK60 No. W57 14140.0460
1 each flag wrench (23 8390)		Size 5IP; 6IP; 8IP
1 hexagon L-wrench (23 8390)		Size 4 AF

KOMET® MicroKom BluFlex® 2 precision boring system with Bluetooth® technology Ø 6 – 125 mm

23 8392 – 1 precision boring head ABS50, size Ø 6 – 125 mm.
- Linearity range: –0.2 to +4.4 mm (-0.0079 inch to 0.1732 inch) on the Ø.
- µ-precise display resolution: 0.001 mm on the Ø.
- Internal hexagon wrench allows radial adjustment and clamping of the micro-adjustable drilling head.
- Modern high-contrast OLED display directly at the micro-adjustable drilling head.
- The display can be rotated through 180°.
- Easy to operate directly at the touch display.
- Additional Bluetooth® low energy interface for easy display on a commercially-available smartphone with Android™ or IOS 7.
- Higher speeds thanks to integral partial balancing.
- Very sensitive adjustment permits precise infeed.
- Absolute travel measuring system – the absolute and relative slide position is output every time the device is switched on.
- Universal ABS® port.
- Battery easily replaceable.
- 1: 1 compatible with the available variations of the previous system.

23 8392



27G 23 8392	Fine boring head MicroKom BluFlex® 2	–

Boring range Ø	mm	6-125
27G 23 8394	Tool set MicroKom BluFlex® 2	XXX
Supplied with: 1 each cartridge		M05 20101 M05 20151
1 bridge		M05 80101
1 serrated body		M05 90100
1 packing piece		M05 90501
1 each boring bar		B05 20100, size Ø 6 – 10 mm B05 20140, size Ø 10 – 14 mm B05 20180, size Ø 14 – 18 mm B05 20220, size Ø 18 – 22 mm B05 20260, size Ø 22 – 26 mm
4 indexable inserts		TOGX 090204EN-14 BK60 No. W57 14140.0460
2 each indexable inserts		TOGX 140304EN-14 BK60 No. W57 26140.0460 TOGX 06T102EN-14 BK60 No. W57 04140.0260 WOHX 02T001EL-G12 BK6440 No. W00 04120.016440
1 each flag wrench		L05 01110; L05 01120; L05 01240; L05 01260.

23 8394

KOMET® Bridges for Ø extension 120 - 365 mm

Suitable for: M05 MicroKom® hi.flex No. 238390, 238391 and M04 MicroKom BluFlex® 2 No. 238392, 238394 in conjunction with cartridge No. 239921 and insert No. 243907 size 14-140.

Boring range Ø	mm	90-125	120-155	150-185	180-215	210-245	240-275	270-305	300-335	330-365
24Z 23 8395	Bridge for MicroKom® hi.flex and MicroKom BluFlex® 2	(XXX)	XXX	XXX	XXX	(XXX)	(XXX)	(XXX)	(XXX)	(XXX)

ABS

KOMET® Arbors with ABS® connection

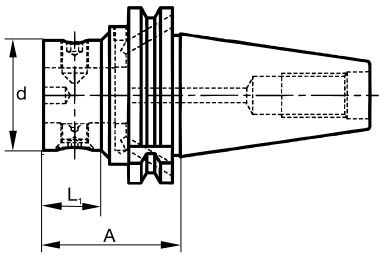
Note: Further arbors with ABS® connection on request.

23 9000

Arbors SK40 / 50

DIN 69871 | Form ADB | G 6.3 8000 min^{-1}

Supplied with: **Complete with sealing washer and conversion set for form AD.**



ABS® Ø d		mm	25	32	40	50	63	80	100
24A 23 9000	KOMET® arbor	SK 40	XXX	XXX	XXX	XXX	XXX	–	–
24A 23 9002		SK 50	(XXX)	(XXX)	(XXX)	XXX	XXX	XXX	XXX
A (23 9000)		mm	50	50	50	50	90	–	–
A (23 9002)		mm	60	60	60	60	60	70	115
L_1 (23 9000)		mm	19	19	19	30	70	–	–
L_1 (23 9002)		mm	20	20	20	22	29	50	95

Eccentric adjusting units SK40 / 50

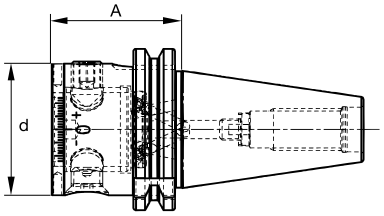
DIN 69871 | Form ADB

■ Adjustment range ± 0.25 mm on the Ø. 1 graduation equals 0.02 mm on the Ø.

Application: For fine adjustment of drilling and boring tools.

Supplied with: **Complete with sealing washer and conversion set for form AD.**

23 9010

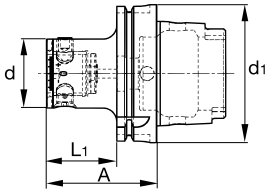


ABS® Ø d		mm	50	63
24I 23 9010	KOMET® eccentric adjusting unit	SK 40	XXX	(XXX)
24I 23 9012		SK 50	XXX	XXX
A (23 9010)		mm	50	90
A (23 9012)		mm	60	

Arbors HSK A63 / HSK A100

DIN 69893

23 9070



ABS® Ø d		mm	25	32	40	50	63	80	Ø d_1 mm
24A 23 9020	KOMET® arbor	HSK-A 63	XXX	XXX	XXX	XXX	XXX	(XXX)	63
24A 23 9022		HSK-A 100	(XXX)	(XXX)	(XXX)	XXX	XXX	XXX	100
A (23 9020)		mm	50	50	60	70	80	100	
A (23 9022)		mm	60	60	80	80	80	90	
L_1 (23 9020)		mm	24	24	34	44	–	–	
L_1 (23 9022)		mm	31	31	51	51	51	61	

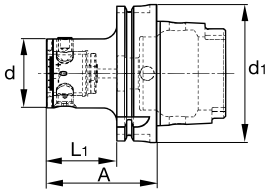
Eccentric adjusting device HSK A100

DIN 69893

Adjustment range ± 0.25 mm on the Ø. 1 graduation equals 0.02 mm on the Ø.

Application: For fine adjustment of drilling and boring tools.

23 9030

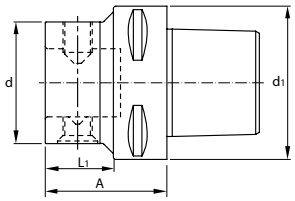


ABS® Ø d		mm	50
24I 23 9030	KOMET® eccentric adjusting device	HSK-A 100	XXX
A		mm	80
Ø d_1		mm	100
L_1		mm	46.5

Arbors PSC 40 / 63 / 80

ISO 26623-1

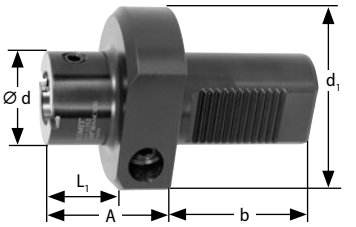
23 9025



ABS® Ø d		mm	50	63	80
27A 23 9025	KOMET® arbor	PSC 40	(XXX)	–	–
27A 23 9026		PSC 50	(XXX)	–	–
27A 23 9027		PSC 63	(XXX)	(XXX)	–
27A 23 9028		PSC 80	(XXX)	(XXX)	(XXX)
A		mm	50	60	80

Arbors VDI 30 / 40 / 50

ABS® Ø d		mm	50	Ø d_1 mm
24A 23 9035	KOMET® arbor	VDI 30	XXX	68
24A 23 9036		VDI 40	XXX	83
24A 23 9037		VDI 50	XXX	98
A (23 9035, 23 9036)		mm	60	
A (23 9037)		mm	65	
L_1 (23 9035, 23 9036)		mm	38	
L_1 (23 9037)		mm	35	
b (23 9035)		mm	55	
b (23 9036)		mm	63	
b (23 9037)		mm	78	

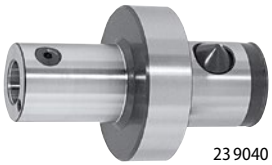


23 9035

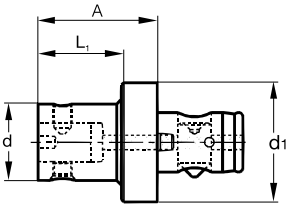
ABS

KOMET® Reducers with ABS® connection

Application: For reducing of nominal arbor ABS 50 to ABS Ø d.



23 9040



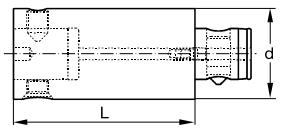
ABS® Ø d		mm	25	32	40
24A 23 9040	KOMET® reducer ABS 50		(XXX)	(XXX)	(XXX)
Ø d_1		mm	50		
A		mm	50		
L_1		mm	35		

ABS

KOMET® Extensions with ABS® connection

Note: Other lengths and reduced weight extensions as well as torsional vibration dampers for ABS® are available on request.

23 9086



ABS® Ø d		mm	25	32	40	50	63	80	Length L mm
24A 23 9080	KOMET® extension		–	(XXX)	–	–	–	–	35
24A 23 9082			–	–	(XXX)	–	–	–	40
24A 23 9084			(XXX)	–	–	–	–	–	45
24A 23 9086			–	(XXX)	–	XXX	–	–	50
24A 23 9088			XXX	–	(XXX)	–	XXX	–	60
24A 23 9090			–	–	–	XXX	–	–	65
24A 23 9092			–	XXX	–	–	–	(XXX)	70
24A 23 9094			–	–	–	–	(XXX)	XXX	85
24A 23 9096			–	–	(XXX)	–	–	–	90
24A 23 9098			–	–	–	XXX	–	–	100
24A 23 9100			–	–	–	–	XXX	XXX	125
24A 23 9102			–	–	–	XXX	–	–	150

Standard | h9

Countersink 120° and 100°

Easy and chatter-free deburring and countersinking.

15 0025 – Very **sturdy version** with **solid carbide head,** for heavy-duty use. Specially for **materials that are difficult to machine.**

15 0020/0023 – Flutes ground from solid.

120° | HSS | 3

15 0020

100° | HSS | 3

15 0023

100° | Solid carbide | 5

15 0025

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	Ti > 850 N	Inconel®	GRP	CRP					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	S	S	N	N					
15 0020/0023	70	33		28	27	27															●	○	
15 0025															6	5	5	5			●	○	

External ∅	11M 15 0020	11M 15 0023	11M 15 0025	Number of cutting edges Z		smallest countersink ∅ for holes from		L_{tot}			< 500 N	Inconel®
	Countersink HSS		Countersink solid carbide	15 0020 15 0023	15 0025	15 0020 15 0025	15 0023	15 0020 15 0025	15 0023		f 15 0020 15 0023	f 15 0025
mm	120°	100°	100°			mm	mm	mm	mm	mm	mm/rev.	mm/rev.
8	XXX	XXX	–	3	–	2	2	49	49	6	0.09	–
10,4	–	XXX	–	3	–	–	2.5	–	49	6	0.12	–
12,4	–	XXX	XXX	3	5	4	3	55	55	8	0.12	0.05
12,5	XXX	–	–	3	–	2.8	–	54	–	8	0.12	–
16	XXX	–	–	3	–	3.2	–	57	–	10	0.14	–
16,5	–	XXX	XXX	3	5	4.5	3.5	58	59	10	0.14	0.07
20	XXX	–	–	3	–	3.5	–	59	–	10	0.16	–
20,5	–	XXX	XXX	3	5	5	4	61	62	10	0.16	0.08
25	XXX	XXX	–	3	–	3.8	5	63	65	10	0.2	–

90° | HSS | 1 | h9

Size 6 double-ended cutting

Countersink 90°

Axial-radial relief ground conical profile for chatter-free deburring and countersinking. This delivers a high-quality countersinking surface. Generous-sized flutes for very good chip clearance. Can be reground easily on the inner flat faces of the flutes.

15 0050

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	Graphite GRP CRP	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	N						
15 0050		33		28	27									7				○		●	○	○	

External ∅	mm	6	8	12,5	16	20	25	31,5
11M 15 0050 Countersink single flute 90°		XXX	XXX	XXX	XXX	XXX	XXX	XXX
L_{tot}	mm	45	50	50	56	60	75	80
Shank ∅	mm	6	8	8	10	10	12	12

90° | HSS | h9

Deburring countersink 90°

Special cutter geometry for an easy peeling cut.
The swarf is evacuated via the oblique hole towards the shank.

15 0065

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	Graphite GRP CRP	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	N						
15 0065		33		28	17									7				○		●		○	

Type		5	10	15	20	25
11M 15 0065 Deburring countersink 90°		XXX	XXX	XXX	XXX	XXX
for hole ∅	mm	2 – 5	5 – 10	10 – 15	15 – 20	20 – 25
Head ∅	mm	10	14	20	28	30
L_{tot}	mm	46	55	65	85	95
Shank ∅	mm	6	8	10	12	15

Deburring countersink set

11M 15 0070	Set of deburring countersinks in a case 90°	XXX

15 0070

Garant High-precision countersink 90° with unequal spacing

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	CuZn	Graphite GRP CRP	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	M	M	S	K	N	N						
15 0130/0132	75	75	50	65	50	30	18	8	8			16	10	12	25	60	○	●		●		○	

High-precision countersink 90° with unequal spacing

90° | HSS | ≠ | 3 | DIN 335 C

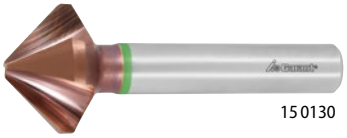
All countersinks have 3 cutting edges. Special geometry with extremely unequal spacing and matching cutting edge preparation. Radially relief ground. Flutes ground from solid. Newly developed **special TiAlN coating** for long service life.
High-precision countersink, produced with tight manufacturing tolerances similar to DIN 335-C.

15 0132 – Three **drive flats on the shank** for use in a 3-jaw chuck.

Advantage: Very smooth cutting throughout the entire countersinking operation. Chatter-free running for perfect results and **optimum tool service life.**

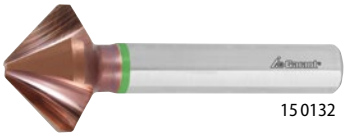
Application: High-precision countersinks for production of exactly round 90° countersunk surfaces.

h9



15 0130

h9



15 0132

Shank with 3 clamping flats.

Extremely unequal spacing (cutting edges arranged at unequal intervals)

External ∅	11M 15 0130 Precision countersinks with unequal spacing 90°	11M 15 0132 Precision countersinks with unequal spacing with 3 drive flats 90°	smallest countersink ∅ for holes from	L_{tot}		for countersunk screws ISO 2009, 2010, 7046, 7047	for countersunk screws DIN 7991	< 500 N f
mm	TiAlN	TiAlN	mm	mm	mm			mm/rev.
4,3	XXX	XXX	1.3	40	4	M2	–	0.08
6	XXX	XXX	1.5	45	5	M3	–	0.1
6,3	XXX	XXX	1.5	45	5	–	M3	0.1
8	XXX	XXX	2	50	6	M4	–	0.1
8,3	XXX	XXX	2	50	6	–	M4	0.1
10	XXX	XXX	2.5	50	6	M5	–	0.13
10,4	XXX	XXX	2.5	50	6	–	M5	0.13
11,5	XXX	XXX	2.8	56	8	M6	–	0.13
12,4	XXX	XXX	2.8	56	8	–	M6	0.13
15	XXX	XXX	3.2	60	10	M8	–	0.13
16,5	XXX	XXX	3.2	60	10	–	M8	0.18
19	XXX	XXX	3.5	63	10	M10	–	0.18
20,5	XXX	XXX	3.5	63	10	–	M10	0.22
23	XXX	XXX	3.8	67	10	M12	–	0.22
25	XXX	XXX	3.8	67	10	–	M12	0.25
31	XXX	XXX	4.2	71	12	–	M16	0.25

Sets of high-precision 90° countersinks

90° | HSS | ≠ | 3 | DIN 335 C

15 0301/0305 – Precision countersink 150130.

15 0303/0307 – Precision countersink 150132. All countersinks **also have 3 drive flats** on the shank for use in a 3-jaw chuck.

Advantage: Very smooth cutting throughout the entire countersinking operation. Chatter-free running for perfect results and **optimum tool service life.**

Application: For production of **exactly round 90° countersunk surfaces.**

Supplied with:

15 0301/0303 – 5-piece precision countersink set in a **round box.**

15 0305/0307 – 5-piece precision countersink set in a **case.**

h9 | h9

150301 150305 | 150303 150307

15 0301
15 0303

15 0305
15 0307

Number of countersinks			5
11M 15 0301	High-precision countersink set No. 150130 in a box 90°	TiAlN	XXX
11M 15 0303	High-precision countersink set with 3 drive flats No. 150132 in a box 90°	TiAlN	XXX
Content: 1 pc. each countersink			Size 6.3; 10.4; 12.4; 16.5; 20.5

Number of countersinks			5
11M 15 0305	High-precision countersink set No. 150130 in a case 90°	TiAlN	XXX
11M 15 0307	High-precision countersink set with 3 drive flats No. 150132 in a case 90°	TiAlN	XXX
Content: 1 pc. each countersink			Size 6.3; 10.4; 16.5; 20.5; 25

Cartridge

for number of countersinks		5
11M 15 0368	Empty case	XXX

Garant Countersink 90°

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	CuZn	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	N						
150150/0152	70	33		28	27	27														●		○	
150170			25	34	32	32								9	8		80	●		●		○	

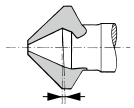
Countersink 90°

90° | HSS | 3 | DIN 335 C

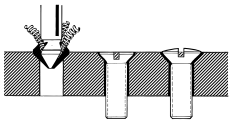
All countersinks have 3 cutting edges, radially relieved.
Flutes are ground from solid.

150152 – Three **drive flats on the shank** for use in a 3-jaw chuck.
150170 – Precision countersink for considerable performance improvement.
150150/0152 – High-precision countersink, produced with tight manufacturing tolerances similar to DIN 335-C.

Application: High precision countersinks for chatter-free countersinking.



Relief ground



Three-flute countersinks for accurate centring.

h9

150150

h9

150152

h9

150170

External ∅ mm	11M 150150 High-precision countersink 90°	11M 150152 High-precision countersink 90°	11M 150170 High-precision countersink 90° TiAlN	smallest countersink ∅ for holes from mm	L_{tot} mm	mm	for countersunk screws ISO 2009, 2010, 7046, 7047	for countersunk screws DIN 7991	< 500 N f mm/rev.
4,3	XXX	–	XXX	1.3	40	4	M2	–	0.07
5	XXX	–	XXX	1.5	40	4	M2.5	–	0.07
6	XXX	XXX	XXX	1.5	45	5	M3	–	0.09
6,3	XXX	XXX	XXX	1.5	45	5	–	M3	0.09
7	XXX	XXX	XXX	1.8	50	6	M3.5	–	0.09
8	XXX	XXX	XXX	2	50	6	M4	–	0.09
8,3	XXX	XXX	XXX	2	50	6	–	M4	0.09
10	XXX	XXX	XXX	2.5	50	6	M5	–	0.12
10,4	XXX	XXX	XXX	2.5	50	6	–	M5	0.12
11,5	XXX	XXX	XXX	2.8	56	8	M6	–	0.12
12,4	XXX	XXX	XXX	2.8	56	8	–	M6	0.12
15	XXX	XXX	XXX	3.2	60	10	M8	–	0.12
16,5	XXX	XXX	XXX	3.2	60	10	–	M8	0.14
19	XXX	XXX	XXX	3.5	63	10	M10	–	0.14
20,5	XXX	XXX	XXX	3.5	63	10	–	M10	0.16
23	XXX	XXX	XXX	3.8	67	10	M12	–	0.16
25	XXX	XXX	XXX	3.8	67	10	–	M12	0.2
31	XXX	XXX	XXX	4.2	71	12	–	M16	0.2
40	XXX	XXX	XXX	10	75	12	–	–	0.25

Countersink sets 90°

90° | HSS | 3 | DIN 335 C

h9 | h9

Countersink sets, **in a case.**
Practical set for assembly and workshop use.

Number of countersinks			6	7	17
11M 150310	Countersink set No. 150150 in a case 90°		XXX	XXX	XXX
11M 150312	Countersink set No. 150152 in a case 90°		XXX	XXX	–
11M 150315	Countersink set No. 150170 in a case 90°	TiAlN	XXX	XXX	XXX
Content: 1× each countersink			Size 6; 8; 10; 11.5; 15; 19	Size 6; 8; 10; 11.5; 15; 19; 25	Size 4.3; 5; 6; 6.3; 7; 8; 8.3; 10; 10.4; 11.5; 12.4; 15; 16.5; 19; 20.5; 23; 25

150310

Case

for number of countersinks		6
11M 150370	Empty case for 6 or 7 countersinks	XXX

150370

90° | HSS | 3 | DIN 335 C | h9

HOLEX Countersink 90°

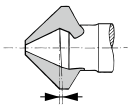
Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	CuZn	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	N						
15 0175	70	33		28	27	27	8													●		○	
15 0180		38		34	32	32								9			80	●		●		○	

Countersink 90°

All countersinks have 3 cutting edges, radially relieved.
Flutes are ground from solid.

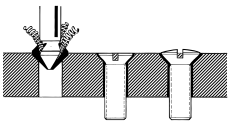
15 0175 – Economy countersink version.
15 0180 – Economy version, improved performance due to coating.

Application: High precision countersinks for chatter-free countersinking.



Relief ground

15 0175



Three-flute countersinks for accurate centring.

15 0180

External ∅ mm	12M 15 0175 Countersink 90°	12M 15 0180 Countersink 90° TiN	smallest countersink ∅ for holes from mm	L_{tot} mm	mm	for countersunk screws ISO 2009, 2010, 7046, 7047	for countersunk screws DIN 7991	< 500 N f mm/rev.
4,3	XXX	–	1.3	40	4	M2	–	0.07
5	XXX	XXX	1.5	40	4	M2.5	–	0.07
6	XXX	XXX	1.5	45	5	M3	–	0.09
6,3	XXX	XXX	1.5	45	5	–	M3	0.09
7	XXX	–	1.8	50	6	M3.5	–	0.09
8	XXX	XXX	2	50	6	M4	–	0.09
8,3	XXX	XXX	2	50	6	–	M4	0.09
10	XXX	XXX	2.5	50	6	M5	–	0.12
10,4	XXX	XXX	2.5	50	6	–	M5	0.12
11,5	XXX	XXX	2.8	56	8	M6	–	0.12
12,4	XXX	XXX	2.8	56	8	–	M6	0.12
15	XXX	XXX	3.2	60	10	M8	–	0.12
16,5	XXX	XXX	3.2	60	10	–	M8	0.14
19	XXX	XXX	3.5	63	10	M10	–	0.14
20,5	XXX	XXX	3.5	63	10	–	M10	0.16
23	XXX	XXX	3.8	67	10	M12	–	0.16
25	XXX	XXX	3.8	67	10	–	M12	0.2
31	XXX	XXX	4.2	71	12	–	M16	0,2

Countersink sets 90°

Countersink sets, **in a case.**
Practical set for assembly and workshop use.

Note: Empty case for 6 or 7 countersinks, see No. 150370, catalogue page 174.

15 0320

Number of countersinks			6	7	17
12M 15 0320	Countersink set No. 150175 in a case 90°		XXX	XXX	XXX
12M 15 0340	Countersink set No. 150180 in a case 90°	TiN	XXX	XXX	–
Content: 1× each countersink			Size 6; 8; 10; 11.5; 15; 19	Size 6; 8; 10; 11.5; 15; 19; 25	Size 4.3; 5; 6; 6.3; 7; 8; 8.3; 10; 10.4; 11.5; 12.4; 15; 16.5; 19; 20.5; 23; 25

90° | HSS | 3 | Standard

Garant

Countersink 90°

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	CuZn	Graphite GRP CRP	Uni
ISO code	N	N	N	P	P	P	P	P	H	H	H	M	M	S	K	N	N	
150371/0372	70	33	20	28	27	27											○	●
150376/0377	75	75	50	65	50	30	18	8	8			16	10	12	25	60	○	●

Countersink 90°, long

All countersinks have 3 cutting edges, radially relief ground. Flutes ground from solid.
High-precision countersink, produced to tight manufacturing tolerances similar to DIN335-C, **with long plain shank**.

150376 – Three **drive flats on the shank** for use in a 3-jaw chuck.

150376/0377 – **Special geometry with extremely unequal spacing** and matching cutting edge preparation.
Newly developed, **special TiAlN coating** for long tool life.

Application:

150376/0377 – High-precision countersinks for production of **exactly round 90° countersunk surfaces.**

h9

150371

h9

150377

h9

150376

External ∅ mm	11M 150371 High-precision countersink, long 90°	11M 150377 TiAlN	11M 150376 High-precision countersink, long, with 3 drive flats TiAlN	smallest countersink ∅ for holes from mm	L_{tot} mm	mm	for countersunk screws DIN 7991	f < 500 N 150371 mm/rev.	f < 500 N 150377 150376 mm/rev.
6,3	XXX	XXX	XXX	1.5	104	5	M3	0.09	0.1
8,3	XXX	XXX	XXX	2	105	6	M4	0.09	0.1
10,4	XXX	XXX	XXX	2.5	107	6	M5	0.12	0.13
12,4	XXX	XXX	XXX	2.8	108	8	M6	0.12	0.13
16,5	XXX	XXX	XXX	3.2	111	10	M8	0.14	0.18
20,5	XXX	XXX	XXX	3.5	114	10	M10	0.16	0.22
25	XXX	XXX	XXX	3.8	118	10	M12	0.2	0.25
31	XXX	XXX	XXX	4.2	140	12	M16	0.2	0.25

Countersink 90°, extra long

All countersinks have 3 cutting edges, radially relief ground. Flutes ground from solid.
High-precision countersink, produced to tight manufacturing tolerances similar to DIN 335-C **with extra long plain shank.**

h9

External ∅ mm	11M 150372 High-precision countersink, extra long 90°	smallest countersink ∅ for holes from mm	L_{tot} mm	mm	for countersunk screws DIN 7991	f < 500 N mm/rev.
6,3	XXX	1.5	154	5	M3	0.09
8,3	XXX	2	155	6	M4	0.09
10,4	XXX	2.5	157	6	M5	0.12
12,4	XXX	2.8	158	8	M6	0.12
16,5	XXX	3.2	161	10	M8	0.14
20,5	XXX	3.5	164	10	M10	0.16
25	XXX	3.8	168	10	M12	0.2
31	XXX	4.2	190	12	M16	0.2

Countersink sets 90°

Handy for assembly and workshop use.

150369 – Precision countersink 150376, **with long shank with 3 drive flats.**

150373 – Countersink 150371, **with long shank.**

150374 – Countersink 150372, **with extra long shank.**

150375 – Precision countersink 150377, **with long shank.**

Application:

150369/0375 – High-precision countersinks for production of **exactly round 90° countersunk surfaces.**

Supplied with: 6-piece countersink set in a case.

Number of countersinks			6
11M 150373	Countersink set, long No. 150371 in a case 90°		XXX
11M 150374	Countersink set, extra long, No. 150372 in a case 90°		XXX
11M 150375	Precision countersink set, long No. 150377 in a case 90°	TiAlN	XXX
11M 150369	High-precision countersink set with 3 drive flats, long, No. 150376 in a case 90°	TiAlN	XXX
Content: 1× each countersink			Size 6.3; 8.3; 10.4; 12.4; 16.5; 20.5

150375

90° | HSS E | 3 | DIN 335 C

Garant

Countersink 90°, for stainless and acid-resistant steels

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	CuZn
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	K	N
15 0378	70	33	25	28	27	27	8	4						7	7	7	12	65
15 0379		38	30	34	32	32	10	5						9	9	8	14	80
15 0389/0393	53	40	35	55	30	25	15	12						18	13	13	30	42

Countersink 90°, for stainless and acid-resistant steels

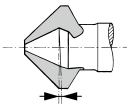
All countersinks have 3 cutting edges, radially relieved.
Flutes are ground from solid.
High-precision countersink, produced with tight manufacturing tolerances similar to DIN 335-C.

15 0393 – Three **drive flats on the shank** for use in a 3-jaw chuck.

15 0389/0393 – Special geometry with unequal spacing and matching cutting edge preparation. Newly developed AlTiCN coating especially for stainless steels.

Application:

15 0389/0393 – High-precision countersinks for production of exact, round 90° counterbores.



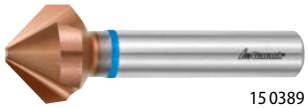
h9

15 0378

h9

15 0379

h9 | ≠



15 0389

h9 | ≠

new

15 0393

External ∅ mm	11M 15 0378 High-precision countersink 90°	11M 15 0379 High-precision countersink 90° TiCN	11M 15 0389 High-precision countersink with unequal spacing 90° AlTiCN	11M 15 0393 High-precision countersink with unequal spacing and 3 drive flats 90° AlTiCN	smallest countersink ∅ for holes from mm	L_{tot} mm	mm	for countersunk screws ISO 2009, 2010, 7046, 7047	for countersunk screws DIN 7991	INOX < 900 N f 15 0378 15 0379 mm/rev.	INOX < 900 N f 15 0389 15 0393 mm/rev.
4,3	XXX	XXX	XXX	XXX	1.3	40	4	M2	–	0.04	0.05
5	XXX	XXX	–	–	1.5	40	4	M2.5	–	0.04	–
6	XXX	XXX	XXX	XXX	1.5	45	5	M3	–	0.05	0.05
6,3	XXX	XXX	XXX	XXX	1.5	45	5	–	M3	0.05	0.05
7	XXX	XXX	–	–	1.8	50	6	M3.5	–	0.05	–
8	XXX	XXX	XXX	XXX	2	50	6	M4	–	0.05	0.05
8,3	XXX	XXX	XXX	XXX	2	50	6	–	M4	0.05	0.05
10	XXX	XXX	XXX	XXX	2.5	50	6	M5	–	0.06	0.05
10,4	XXX	XXX	XXX	XXX	2.5	50	6	–	M5	0.06	0.05
11,5	XXX	XXX	XXX	XXX	2.8	56	8	M6	–	0.06	0.05
12,4	XXX	XXX	XXX	XXX	2.8	56	8	–	M6	0.06	0.05
15	XXX	XXX	XXX	XXX	3.2	60	10	M8	–	0.06	0.06
16,5	XXX	XXX	XXX	XXX	3.2	60	10	–	M8	0.07	0.06
19	XXX	XXX	XXX	XXX	3.5	63	10	M10	–	0.07	0.06
20,5	XXX	XXX	XXX	XXX	3.5	63	10	–	M10	0.08	0.07
23	XXX	XXX	–	–	3.8	67	10	M12	–	0.08	–
25	XXX	XXX	XXX	XXX	3.8	67	10	–	M12	0.09	0.1
31	XXX	XXX	XXX	XXX	4.2	71	12	–	M16	0.09	0.12

Countersink sets 90°, for stainless and acid-resistant steels

Countersink sets, **in a case.**
Practical set for assembly and workshop use.

Application:

15 0391/0394 – High-precision countersinks for production of **exactly round 90° countersunk surfaces.**

Note:

Size 7 – Supplied in a case 150370 **size 6.**

Number of countersinks			6	7	17
11M 15 0381	Countersink set No. 150378 in a case 90°		XXX	XXX	XXX
11M 15 0385	Countersink set No. 150379 in a case 90°	TiCN	XXX	XXX	XXX
11M 15 0391	Countersink set No. 150389 in a case 90°	AlTiCN	XXX	XXX	–
new 11M 15 0394	Countersink set No. 150393 in a case 90°	AlTiCN	XXX	XXX	–
Content: 1× each precision countersink			Size 6; 8; 10; 11.5; 15; 19	Size 6; 8; 10; 11.5; 15; 19; 25	Size 4.3; 5; 6; 6.3; 7; 8; 8.3; 10; 10.4; 11.5; 12.4; 15; 16.5; 19; 20.5; 23; 25

≠

15 0391

90° | Solid carbide | h9

Garant Countersink 90°

15 0382 – Similar to DIN 335-C. All countersinks have 3 cutting edges, radially relieved.
For chatter-free countersinking and deburring. Ø 6 and 8 as solid carbide version, from Ø 10 solid carbide head with brazed shank.

15 0386 – Very **sturdy version,** multi-flute, **special geometry** for **very heavy duty use.** For **chatter-free countersinking** and **deburring. For difficult to machine materials.** Solid carbide head with brazed shank.
Suitable even for Hardox 500.

Type H | 4 | 5 | Standard

15 0386

3 | DIN 335 C

15 0382

Note:
15 0386 – Ensure stable conditions during operation!

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	TOOLOX® 33 HRC	TOOLOX® 44 HRC	HARDOX® 500 < 1600 N	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	Graphite GRP CRP					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	K	N					
15 0382		75	**50**	65	**60**	**30**	**18**	8	8					**16**	**10**	16	25	○		●			●
15 0386						30	18	**8**	**8**	**8**	**8**	**8**	**6**	**16**	**10**	**6**		**5**		●			●

External Ø mm	11M 15 0386 Countersink solid carbide 90°	11M 15 0382 Countersink solid carbide 90°	Number of cutting edges Z 15 0386	Number of cutting edges Z 15 0382	smallest countersink Ø for holes from 15 0386 mm	smallest countersink Ø for holes from 15 0382 mm	L_{tot} mm	mm	for countersinking to DIN 74 AF	for countersinking to DIN 74 BF 15 0382	INOX < 900 N f 15 0382 mm/rev.	< 60 HRC f 15 0386 mm/rev.
6	–	XXX	–	3	–	2	40	5	M3	–	0.05	–
8	–	XXX	–	3	–	2	45	6	M4	–	0.05	–
10	–	XXX	–	3	–	2.5	46	8	M5	–	0.06	–
10,4	XXX	XXX	4	3	4	2.5	46	8	–	M5	0.06	0.04
11,5	–	XXX	–	3	–	2.8	56	8	M6	–	0.07	–
12,4	XXX	XXX	5	3	4	2.8	56	8	–	M6	0.07	0.05
15	–	XXX	–	3	–	3.2	60	10	M8	–	0.07	–
16,5	XXX	XXX	5	3	4.5	3.2	60	10	–	M8	0.07	0.05
20,5	XXX	XXX	5	3	5	3.5	63	10	–	M10	0.08	0.06
25	XXX	XXX	5	3	5.5	3.8	67	10	–	M12	0.1	0.08
31	XXX	XXX	5	3	6	4.2	71	12	–	M16	0.12	0.1

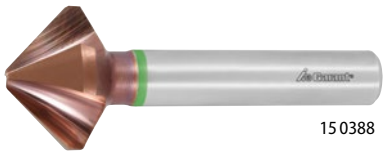
90° | Solid carbide | ≠ | 3 | DIN 335 C | h6

Garant High-precision countersink 90° with unequal spacing

All countersinks have 3 cutting edges. Special geometry with extremely unequal spacing and matching cutting edge preparation. Radially relief ground. Flutes ground from solid. Newly developed **special TiAlN coating** for long service life.
High-precision countersink, produced with tight manufacturing tolerances similar to DIN 335-C.

Advantage: Very smooth cutting throughout the entire countersinking operation. Chatter-free running for perfect results and **optimum tool service life.**

Application: High-precision countersinks for production of exactly round 90° countersunk surfaces. Very well suited to virtually all materials. Advantage in comparison to HSS countersinks especially in the field of high-tensile steels and because the working life is several times longer. **Shank tolerance h6** - suitable for mounting in hydraulic chucks or shrink-fit chucks.


15 0388

Extremely unequal spacing (cutting edges arranged at unequal intervals).

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	CuZn	Graphite GRP CRP	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	M	M	S	K	N	N						
15 0388	**80**	**80**	**60**	**65**	**60**	**50**	**40**	**10**	**12**			**25**	**20**	**15**	**35**	**70**	○	●		●	●		○

External Ø mm	11M 15 0388 Precision solid carbide countersink with unequal spacing 90° TiAlN	smallest countersink Ø for holes from mm	L_{tot} mm	mm	for countersunk screws DIN 7991	< 1100 N f mm/rev.
6,3	XXX	1.5	45	5	M3	0.08
8,3	XXX	2	50	6	M4	0.1
10,4	XXX	2.5	50	6	M5	0.1
12,4	XXX	2.8	56	8	M6	0.12
16,5	XXX	3.2	60	10	M8	0.16
20,5	XXX	3.5	63	10	M10	0.2
25	XXX	3.8	67	10	M12	0.24
31	XXX	4.2	71	12	M16	0.24

90° | HSS | 3 | DIN 335 D | MT1-4

Countersink 90°

Countersinks radially relief ground. Chip flutes are ground from solid up to size 31. Chip angle varies with the countersink ∅ for optimum chip formation. Countersink point and circumference are relief ground and cut easily.

15 0390 – High-precision countersink, produced with tight manufacturing tolerances similar to DIN 335-D.

15 0395 – Economy countersink version.

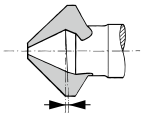
15 0396 – Precision countersink for considerable performance improvement.

Note:	For countersink bits with shank 6.3 mm (1/4 inch) see Group 67.

15 0390

15 0395

15 0396



Relief ground

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	CuZn	Graphite GRP CRP					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	N	N					
15 0390/0395	**70**	**33**		**28**	**27**	27														●		○	
15 0396			25	34	**32**	**32**											**80**			●		○	

External ∅	11M 15 0390 Garant High-precision countersink	12M 15 0395 HOLEX Countersink 90°	11M 15 0396 Garant High-precision countersink TiN	smallest countersink ∅ for holes from	L_{tot}	MT	for countersunk screws ISO 2009, 2010, 7046, 7047	for countersunk screws DIN 7991	< 500 N f
mm				mm	mm				mm/rev.
16,5	XXX	XXX	–	3.2	85	1	–	M8	0.14
19	XXX	–	–	3.5	100	2	M10	–	0.14
20,5	XXX	XXX	–	3.5	100	2	–	M10	0.16
23	XXX	–	–	3.8	106	2	M12	–	0.16
25	XXX	XXX	XXX	3.8	106	2	–	M12	0.2
26	XXX	–	–	4	106	2	M14	–	0.2
28	XXX	–	–	4	112	2	–	M14	0.2
30	XXX	XXX	–	4.2	112	2	M16	–	0.2
31	XXX	XXX	XXX	4.2	112	2	–	M16	0.25
34	XXX	XXX	–	4.5	118	2	M18	M18	0.25
37	XXX	XXX	XXX	4.8	118	2	M20	M20	0.25
40	XXX	XXX	XXX	10	140	3	–	–	0.25
50	XXX	XXX	XXX	14	150	3	–	–	0.25
63	XXX	XXX	XXX	16	180	4	–	–	0.35
80	XXX	XXX	–	22	190	4	–	–	0.35
100	XXX	XXX	–	28	200	4	–	–	0.35

90° HSS 3

Hand deburrer/countersink 90°

Three-flute countersink with ergonomic plastic handle. Handy power grip made of particularly tough and impact-resistant polypropylene. Due to its special surface structure, the **grip is non-slip even in oily or wet hands**.

Note: For clean deburring and chamfering of holes.
Especially useful for assembly work.
For other hand deburrers, see Group 83.

15 0400

	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	Ti > 850 N	GG(G)	CuZn	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	S	K	N						
15 0400	●	●	●	●	●	○								○	○	○	●	●				●	

External ∅	mm	12,4	16,5	20,5	25
11M **15 0400**	Hand deburrer **90°**	XXX	XXX	XXX	XXX
smallest countersink ∅ for holes from	mm	2.8	3.2	3.5	3.8
Overall length	mm	123	138	143	143
Length of handle	mm	100	105	110	110

Hand deburrer set 90°

15 0405

11M **15 0405**	Hand deburrer set **90°**	XXX
Supplied with: 1 each hand deburrer		No. 150400 size 12.4; 16.5; 20.5; 25.

Handle for countersink with 3 drive flats

To accept GARANT high-precision countersinks with unequal spacing and **3 drive flats** on the shank. One handle can accept various different sizes of countersink, all with the same shank diameter.
Handy power grip made of particularly tough and impact-resistant polypropylene. Due to its special surface structure, the grip is non-slip even with oily or wet hands.

15 0408

Shank ∅	mm	6	8	10
11M **15 0408**	Handle for countersink with 3 drive flats	XXX	XXX	XXX
Length of handle	mm	106	112	120

75° HSS 3 Standard h9

Countersink 75°

The chip flutes are ground from solid. Countersink point and circumference are relief ground and cut easily. This results in easy and **chatter-free cutting** for deep countersinking, as well as for deburring or countersinking.

15 0425

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	Graphite GRP CRP	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	N						
15 0425		33		28	27	27														●		○	

External ∅ mm	11M 15 0425 Countersink 75°	smallest countersink ∅ for holes from mm	L_{tot} mm	mm	< 500 N f mm/rev.
8	XXX	2	50	6	0.09
10,4	XXX	2.5	51	6	0.12
12,5	XXX	2.8	54	8	0.12
16,5	XXX	3.5	61	10	0.14
20	XXX	3.5	63	10	0.16
25	XXX	3.8	71	10	0.2

60° | HSS | 3 | DIN 334

Countersink 60°

15 0817 – Three **drive flats on the shank** for use in a 3-jaw chuck.

15 0815/0817 – **High-precision 60° countersink with unequal spacing.** **Special geometry with extremely unequal spacing** and matching cutting edge preparation. Radially relief ground. Flutes ground from solid. Newly developed **special TiAlN coating** for long service life.

15 0820–0845 – The chip flutes are ground from solid. Countersink point and circumference are relief ground and cut easily. This results in easy and **chatter-free cutting** for deep countersinking, as well as for deburring or countersinking.

Advantage:

15 0815/0817 – Very smooth cutting throughout the entire countersinking operation. Chatter-free running for perfect results and **optimum tool service life.**

Application:

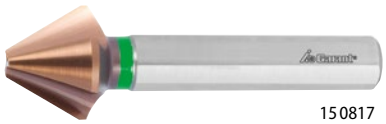
15 0815/0817 – High-precision countersinks for production of **exactly round 60° countersunk surfaces.**

15 0820–0845 – For chatter-free countersinking and deburring. **Especially suitable for chamfering tapped holes and for countersinking in jig and tool making.**

≠ | h9

15 0815

≠ | h9



15 0817

h9

15 0820

h9

15 0840

h9

15 0845

15 0815
15 0817

Extremely unequal spacing (cutting edges arranged at unequal intervals)

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	CuZn	Graphite GRP CRP	Uni				
ISO code	N	N	N	P	P	P	P	P	H	H	H	M	M	S	K	N	N					
15 0815/0817	75	75	50	65	50	30	18	8	8			16	10	12	25	60	○	●		●		○
15 0820	70	33		28	27	27												●		●		○
15 0840	85	40	25	34	32	32						9						●		●		○
15 0845	90	43	25	38	35	35						9						●			●	●

Outer ∅	11M 15 0815	11M 15 0817	11M 15 0820	11M 15 0840	11M 15 0845	smallest countersink ∅ for holes from	L_{tot}		< 500 N f	
	Precision countersinks with unequal spacing	Precision countersinks with unequal spacing with 3 drive flats	Countersink Form C						15 0815 15 0817	15 0820 15 0840 15 0845
			60°							
mm	TiAlN	TiAlN		TiN	TiAlN	mm	mm	mm	mm/rev.	mm/rev.
6,3	XXX	XXX	XXX	XXX	XXX	1.6	45	5	0.1	0.09
8	XXX	XXX	XXX	XXX	XXX	2	50	6	0.1	0.09
10	XXX	XXX	XXX	XXX	XXX	2.5	50	6	0.13	0.12
12,5	XXX	XXX	XXX	XXX	XXX	3.2	56	8	0.13	0.12
16	XXX	XXX	XXX	XXX	XXX	4	63	10	0.18	0.14
20	XXX	XXX	XXX	XXX	XXX	5	67	10	0.22	0.16
25	XXX	XXX	XXX	XXX	XXX	6.3	71	10	0.25	0.2

60° | Solid carbide | 3 | Standard | h9

60° countersink for stainless and acid-resistant steel

Very **sturdy design, special geometry** for **heavy-duty use,** with **chatter-free countersinking and deburring**.

Tool material: Size 8 – of solid carbide.
Size. 10 – 25 – solid carbide head with brazed shank. Design similar to DIN 344-C.

15 0855

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	Graphite GRP CRP				
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	K	N				
15 0855				65	60	30	18	8	8					16	10	16	25			●			

External ∅	11M 15 0855	smallest countersink ∅ for holes from	L_{tot}		INOX < 900 N f
	Countersink solid carbide				
	60°				
mm		mm	mm	mm	mm/rev.
8	XXX	2	50	6	0.1
10	XXX	2.5	50	8	0.12
12,5	XXX	3.2	56	8	0.14
16	XXX	4	63	10	0.14
20	XXX	5	67	10	0.16
25	XXX	6.3	71	10	0.2

60° | HSS | 3 | DIN 334 | MT1-4

Countersink 60°

The chip flutes are ground from solid up to size 31.5. Countersink point and circumference are relief ground and cut easily. This results in easy and **chatter-free cutting** for deep countersinking, as well as for deburring or countersinking.

Application: For chatter-free countersinking and deburring.
Especially suitable for chamfering tapped holes and for countersinking in jig and tool making.

15 0860

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	CuZn	Graphite GRP CRP
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	N	N
15 0860		33		28	27												65	

External ∅	11M 15 0860 Countersink, form D	smallest countersink ∅ for holes from	L_{tot}	MT	< 500 N f
mm	60°	mm	mm		mm/rev.
16	XXX	4	90	1	0.14
25	XXX	6.3	112	2	0.2
31,5	XXX	10	118	2	0.2
40	XXX	12.5	150	3	0.25
50	XXX	16	160	3	0.25
63	XXX	20	190	4	0.35
80	XXX	25	200	4	0.35

HSS E | 3

Mini-counterbore with pin for screws from M1

Spiral fluted counterbore with fixed pilot.
15 5600 – DIN 1866-A / ISO 4205.
15 5700 – DIN 373 / ISO 4206.

Application: **For through hole** quality **fine** (ISO values) to DIN 69.
15 5600 – For countersunk screws to ISO 2009, 2010, 7046, 7047 (DIN 963, 964, 965, 966).
15 5700 – For socket-head screws to DIN 912, 6912, 7984, and cheese-head screws to ISO 1207 (DIN 84).

Note: Size 4.6 × 2.4 is not defined in DIN.

DIN 1866 A | 90°

15 5600

DIN 373 | 180°

15 5700

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	Graphite GRP CRP	Uni
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	N	
15 5600/5700		33		28	27	27								8	5			

Counterbore ∅ × Pin ∅	11M 15 5600 Mini counterbore for through holes	11M 15 5700 Mini counterbore for through holes	for screw size	L_{tot}		< 500 N f
mm	90°	180°		mm	mm	mm/rev.
2×1,1	XXX	–	M1	45	2	0.07
2,2×1,1	–	XXX	M1	45	2.2	0.07
2,5×1,3	XXX	XXX	M1.2	45	2.5	0.07
2,8×1,5	XXX	XXX	M1.4	45	2.8	0.07
3,3×1,7	XXX	XXX	M1.6	56	3.3	0.07
4,3×2,2	XXX	XXX	M2	56	4.3	0.07
4,6×2,4	XXX	XXX	M2.2	56	4.6	0.07
5×2,7	XXX	XXX	M2.5	56	5	0.07
6×3,2	XXX	–	M3	71	6	0.09
8×4,3	XXX	–	M4	71	8	0.09
10×5,3	XXX	–	M5	80	10	0.12
11,5×6,4	XXX	–	M6	80	11.5	0.12

HSS

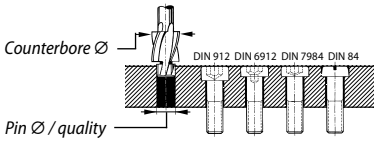
DIN counterbore with pilot for through holes

Spiral fluted counterbore. The pilot Ø matches the intended purpose:
f – for through holes **fine** quality to DIN ISO 273.
m for through holes **medium** quality to DIN ISO 273.

Application: For counterboring socket head screws DIN 912, 6912, 7984, and cheese head screws ISO 1207 (DIN 84).

15 6020

DIN 373 h9



15 6120

Standard MT2-3

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	Graphite GRP CRP	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	N						
15 6020/6120		33		28	27														●				

Counterbore Ø × Pin Ø	11M 15 6020	11M 15 6120	for screw size	for quality of the hole	L_{tot} 15 6020	L_{tot} 15 6120	15 6020	MT 15 6120	< 500 N f
	DIN counterbore for through holes								
mm					mm	mm	mm		mm/rev.
6,5×3,2	XXX	–	M3	f	71	–	5	–	0.09
6,5×3,4	XXX	–	M3	m	71	–	5	–	0.09
6,5×3,9	(XXX)	–	M3.5	m	71	–	5	–	0.09
8×4,3	XXX	–	M4	f	71	–	5	–	0.09
8×4,5	XXX	–	M4	m	71	–	5	–	0.09
10×5,3	XXX	–	M5	f	80	–	8	–	0.12
10×5,5	XXX	–	M5	m	80	–	8	–	0.12
11×6,4	XXX	–	M6	f	80	–	8	–	0.12
11×6,6	XXX	–	M6	m	80	–	8	–	0.12
15×8,4	XXX	–	M8	f	100	–	12.5	–	0.12
15×9	XXX	–	M8	m	100	–	12.5	–	0.12
18×10,5	XXX	XXX	M10	f	100	150	12.5	2	0.14
18×11	XXX	XXX	M10	m	100	150	12.5	2	0.14
20×13	XXX	XXX	M12	f	100	150	12.5	2	0.16
20×13,5	XXX	XXX	M12	m	100	150	12.5	2	0.16
24×15	–	XXX	M14	f	–	162	–	2	0.16
24×15,5	–	XXX	M14	m	–	162	–	2	0.16
26×17	–	XXX	M16	f	–	192	–	3	0.2
26×17,5	–	XXX	M16	m	–	192	–	3	0.2

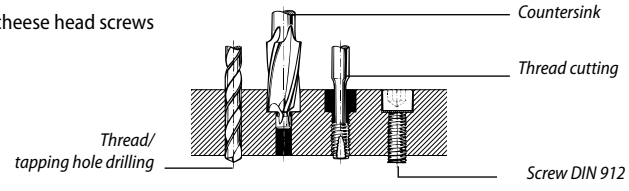
HSS DIN 373 h9

DIN counterbore with pilot for tapping drill holes

15 6220

Three edged, spiral fluted counterbore with fixed pilot for tapping drill holes.

Application: For counterboring socket head screws DIN 912, 6912, 7984 and slotted cheese head screws ISO 1207 (DIN 84).
The pilot diameter matches the tapping hole diameter.



Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	Graphite GRP CRP	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	N						
15 6220		33		28	27	27													●				

Counterbore Ø × Pin Ø	11M 15 6220	for screw size	L_{tot}		< 500 N f
	DIN counterbore for tapping drill holes				
mm			mm	mm	mm/rev.
6,5×2,5	XXX	M3	71	5	0.09
6,5×2,9	XXX	M3.5	71	5	0.09
8×3,3	XXX	M4	71	5	0.09
10×4,2	XXX	M5	80	8	0.12
11×5	XXX	M6	80	8	0.12
15×6,8	XXX	M8	100	12.5	0.12
18×8,5	XXX	M10	100	12.5	0.14
20×10,2	XXX	M12	100	12.5	0.16

Garant Counterbore sets in a case

HSS | DIN 373 | h9

15 6420 – Set of the most commonly used counterbores **for screws M3 – M4 – M5 – M6 – M8 – M10.**
Size DF – Counterbore 156020 **DF** = through hole **fine** quality

Size DM – Counterbore 156020 **DM** = through hole **medium** quality

Size K – Counterbore 156220 **K** = tapping hole

15 6420

Type		DF	DM	K
11M 15 6420	Counterbore set, 6 pieces, in a case	XXX	XXX	XXX
Content: Counterbore ∅×pilot ∅		1× each size 6.5×3.2; 8×4.3; 10×5.3; 11×6.4; 15×8.4; 18×10.5	1× each size 6.5×3.4; 8×4.5; 10×5.5; 11×6.6; 15×9; 18×11	1× each size 6.5×2.5; 8×3.3; 10×4.2; 11×5; 15×6.8; 18×8.5
11M 15 6450	Empty case for 6 counterbores	XXX		

Garant DIN counterbore for interchangeable pilots

HSS | DIN 375 | MT2-3

Multi-edged, spiral fluted counterbore with recess in face for fitting various pilots. Pilot is clamped with a screw in the counterbore.

Application: **One** counterbore can be used for **several** pilot holes of different diameters due to the interchangeable pilots.

Note: The dimensions relate to screws DIN 912, 6912, 7984 and ISO 1207. However, with an appropriate pilot, a counterbore can be used for other screw sizes or counterbore / pilot diameter combinations.

15 6520

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	Graphite GRP CRP	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	N						
15 6520		33		28	27	27													●				

Counterbore ∅	11M 15 6520 Counterbore without pilot	for screw size	Hole ∅ a	Length without pilot pin	MT	< 500 N f
mm			mm	mm		mm/rev.
15	XXX	M8	4	132	2	0.12
18	XXX	M10	5	140	2	0.14
20	XXX	M12	5	140	2	0.16
24	XXX	M14	6	150	2	0.16
26	XXX	M16	8	180	3	0.2
30	XXX	M18	8	180	3	0.2
33	XXX	M20	10	190	3	0.2
36	XXX	M22	10	190	3	0.2
40	XXX	M24	10	190	3	0.25

Pilot pin

DIN 1868

15 6620

∅ a×∅ d	11M 15 6620 Pilot for counterbore	for screw size	for hole	suitable for counterbore ∅
mm				mm
4×6,8	XXX	M8	Core hole	15
5×6,8	XXX	–	–	18; 20
5×8,4	(XXX)	–	–	18; 20
5×8,5	XXX	M10	Core hole	18; 20
5×9	XXX	–	–	18; 20
5×10,2	XXX	M12	Core hole	18; 20
5×11	XXX	M10	Through hole medium	18; 20
5×13	XXX	M12	Through hole fine	18; 20
6×8,5	XXX	–	–	24
6×12	XXX	M14	Core hole	24
8×10,2	(XXX)	–	–	26; 30
8×12	XXX	–	–	26; 30
8×14	XXX	M16	core hole	26; 30

∅ a×∅ d	11M 15 6620 Pilot for counterbore	for screw size	for hole	suitable for counterbore ∅
mm				mm
8×17	XXX	M16	Through hole fine	26; 30
8×17,5	XXX	M16	Through hole medium	26; 30
8×19	XXX	M18	Through hole fine	26; 30
10×14	XXX	–	–	26; 30
10×17,5	XXX	M20	Core hole	26; 30
10×21	XXX	M20	Through hole fine	26; 30
10×22	XXX	M20	Through hole medium	26; 30
10×26	XXX	M24	Through hole medium	26; 30

Modular counterboring system with internal coolant supply

Complete counterboring tool

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	Graphite GRP CRP	Uni
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	N	
15 6730	40	60	20	25	20	15	10	5						5				

Modular counterboring system holder

Just 4 holder sizes cover a range from 5 mm to 66 mm (up to 85 mm available on request).
Counterbores and solid pilots can be **combined as required** within **one size,** the solid pilot can be changed without removing the counterbore.
Hardened and ground. Counterbore and pilot are clamped by one screw each, the counterbore is additionally protected against turning by means of a pin.

Size 1/20; 2/25 – Plain Weldon shank to DIN 1835 B, with internal coolant supply.

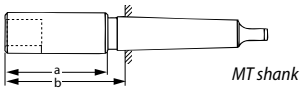
Application: **For DIN counterbores,** as well as with appropriate pilot / counterbore combinations for stepped holes or non-standard counterbores.
For stepped through holes pilots are available ex works in 2 lengths so that these holes can be produced without a separate pilot hole drilling operation.

15 6720_1/20_2/25

Coolant transfer hole

Size / shank size	16C 15 6720 Modular counterboring system holder	Counterbore range	Bore ∅ H7	Hole length	External ∅	Length a	Length b
		mm	mm	mm	mm	mm	mm
01/10	XXX	5 – 9	7	12	14	45	–
0/10	XXX	8 – 16.5	10	18	18	42	–
0MK1	XXX	8 – 16.5	10	18	18	42	49.5
1/12	XXX	14 – 27.5	14	20	24	55	–
1/20	XXX	14 – 27.5	14	20	24	55	–
1MK2	XXX	14 – 27.5	14	20	24	55	61
2/25	XXX	24 – 66	22	28	34.5	75	–
2MK2	XXX	24 – 66	22	28	34.5	75	81
2MK3	XXX	24 – 66	22	28	34.5	75	81

Parallel shank



MT shank

Modular counterboring system

HSS

Very good machining and ideal chip evacuation due to spiral flutes. **Easy to regrind.**
Counterbore is protected against turning in the holder.

Application: For counterboring screw heads to DIN or **by means of an appropriate combination of counterbore and pilot to produce stepped holes or non-standard counterbores.**

Note: Counterbores available on request also in HSS with optional TIN coating and brazed-on carbide tips with form "T" ISO inserts.

15 6730

Size / counterbore ∅	16C 15 6730 Modular counterbore	Z	Cutter length	Shank ∅
mm			mm	mm
01/5	XXX	2	8	7
01/5,5	XXX	2	8	7
01/6	XXX	2	8	7
01/6,5	XXX	2	8	7
01/7	XXX	2	8	7
01/8	XXX	2	8	7
0/8	XXX	3	14	10
0/8,5	XXX	3	14	10
0/9	XXX	3	14	10
0/9,5	XXX	3	14	10
0/10	XXX	3	14	10
0/10,5	XXX	3	14	10
0/11	XXX	3	14	10
0/11,5	XXX	3	14	10
0/12	XXX	3	14	10
0/12,5	XXX	3	14	10
0/13	XXX	3	14	10
0/13,5	XXX	3	14	10
0/14	XXX	3	14	10
0/14,5	XXX	3	14	10
0/15	XXX	3	14	10
0/15,5	XXX	3	14	10
0/16	XXX	3	14	10
0/16,5	XXX	3	14	10
1/14	XXX	3	22	14
1/14,5	XXX	3	22	14
1/15	XXX	3	22	14

Size / counterbore ∅	16C 15 6730 Modular counterbore	Z	Cutter length	Shank ∅
mm			mm	mm
1/15,5	XXX	3	22	14
1/16	XXX	3	22	14
1/16,5	XXX	3	22	14
1/17	XXX	3	22	14
1/17,5	XXX	3	22	14
1/18	XXX	3	22	14
1/18,5	XXX	3	22	14
1/19	XXX	3	22	14
1/19,5	XXX	3	22	14
1/20	XXX	3	22	14
1/20,5	XXX	3	22	14
1/21	XXX	3	22	14
1/21,5	(XXX)	3	22	14
1/22	XXX	3	22	14
1/22,5	XXX	3	22	14
1/23	XXX	3	22	14
1/24	XXX	3	22	14
1/24,5	XXX	3	22	14
1/25	XXX	3	22	14
1/25,5	(XXX)	3	22	14
1/26	XXX	3	22	14
1/27	XXX	3	22	14
1/27,5	XXX	3	22	14
2/24	XXX	4	24	22
2/25	XXX	4	24	22
2/26	XXX	4	24	22
2/27	XXX	4	24	22

Size / counterbore ∅	16C 15 6730 Modular counterbore	Z	Cutter length	Shank ∅
mm			mm	mm
2/28	XXX	4	24	22
2/29	XXX	4	24	22
2/30	XXX	4	24	22
2/31	XXX	4	24	22
2/32	XXX	4	24	22
2/33	XXX	4	24	22
2/34	XXX	4	24	22
2/35	XXX	4	24	22
2/36	XXX	4	24	22
2/38	XXX	4	24	22
2/39	(XXX)	4	24	22
2/40	XXX	4	24	22
2/42	XXX	4	24	22
2/43	(XXX)	4	24	22
2/44	(XXX)	4	24	22
2/45	XXX	4	24	22
2/46	XXX	4	24	22
2/48	(XXX)	4	24	22
2/50	XXX	4	24	22
2/52	(XXX)	4	24	22
2/55	(XXX)	4	24	22
2/56	(XXX)	4	24	22
2/58	(XXX)	4	24	22
2/60	(XXX)	4	24	22
2/66	(XXX)	4	24	22

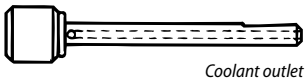
Pilot pin

Fixed guide pin: gas nitrided, precision turned.
Rotating pin: surface hardened and ground.
Size 01/2.4 to 1/8.4 – **fixed pilot.**
Size 1/8.5 to 1/18 – **rotating pilot with coolant bore.**
Size 2/11.5 to 2/13 – **fixed pilot.**
Size 2/14 to 2/32 – **rotating pilot with coolant bore.**

Application: When using the rotating pilot (with coolant bore) size 1 and 2 in holder No. 156720 size 1/20 the coolant is fed directly to the cutting edges for optimum chip evacuation.

Fixed pilot

Rotating pilot


Coolant outlet

Size / counterbore ∅	16C 15 6750 Pilot	overall length mm	Shank ∅ mm
01/2,4	(XXX)	41	2.4
01/3	(XXX)	41	2.4
01/3,3	(XXX)	41	2.4
01/3,5	(XXX)	41	2.4
01/4	XXX	41	2.4
01/4,5	(XXX)	41	2.4
0/4	XXX	59	4
0/4,2	XXX	59	4
0/4,5	XXX	59	4
0/4,9	XXX	59	4
0/5	XXX	59	4
0/5,3	XXX	59	4
0/5,5	XXX	59	4
0/5,8	XXX	59	4
0/6	XXX	59	4
0/6,4	XXX	59	4
0/6,5	XXX	59	4
0/6,6	XXX	59	4
0/6,7	XXX	59	4
0/6,9	XXX	59	4
0/7	XXX	59	4
0/7,5	XXX	59	4
0/7,9	XXX	59	4
0/8	XXX	59	4
0/8,4	XXX	59	4
0/8,5	XXX	59	4

Size / counterbore ∅	16C 15 6750 Pilot	overall length mm	Shank ∅ mm
0/9	XXX	59	4
0/9,5	XXX	59	4
0/10	XXX	59	4
0/10,5	(XXX)	59	4
0/11	(XXX)	59	4
1/6,6	XXX	79	6
1/6,7	XXX	79	6
1/7	XXX	79	6
1/7,5	(XXX)	79	6
1/7,9	(XXX)	79	6
1/8	XXX	79	6
1/8,4	XXX	79	6
1/8,5	XXX	79	6
1/9	XXX	79	6
1/9,5	XXX	79	6
1/9,9	XXX	79	6
1/10	XXX	79	6
1/10,5	XXX	79	6
1/11	XXX	79	6
1/11,5	XXX	79	6
1/12	XXX	79	6
1/12,5	XXX	79	6
1/13	XXX	79	6
1/13,5	XXX	79	6
1/14	XXX	79	6
1/14,5	XXX	79	6

Size / counterbore ∅	16C 15 6750 Pilot	overall length mm	Shank ∅ mm
1/15	XXX	79	6
1/16	XXX	79	6
1/17	XXX	79	6
1/18	XXX	79	6
2/11,5	XXX	105	10
2/12	XXX	105	10
2/13	XXX	105	10
2/14	XXX	105	10
2/14,5	(XXX)	105	10
2/15	XXX	105	10
2/16	XXX	105	10
2/17	XXX	105	10
2/17,5	XXX	105	10
2/18	XXX	105	10
2/19	(XXX)	105	10
2/20	XXX	105	10
2/21	XXX	105	10
2/22	XXX	105	10
2/24	(XXX)	105	10
2/25	(XXX)	105	10
2/26	XXX	105	10
2/28	(XXX)	105	10
2/30	XXX	105	10
2/32	(XXX)	105	10

HSS

2 3 4

Modular counterboring sets in wooden stand

Set of holders, counterbores, and pilots for machining the most common bore ∅.

Application: **For DIN counterbores,** as well as appropriate pilot / counterbore combinations for stepped holes or non-standard counterbores.

Note: Modular counterboring sets in HSS-E and solid carbide available on request.

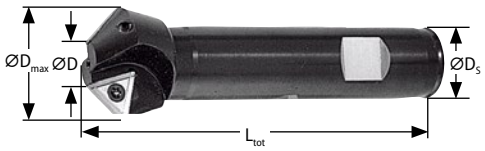
15 6700

Size / shank size		01/10	0/10	0MK1	1/12	1MK2	2MK2	2MK3
16C 15 6700	Modular counterbore set in a wooden stand	XXX	XXX	XXX	XXX	XXX	(XXX)	XXX
Number of cutting edges Z		2	2	2	3	3	3; 4	3; 4
Counterbore range	mm	5 – 9	8.5 – 16.5	8.5 – 16.5	14.5 – 24.5	14.5 – 24.5	26 – 36	26 – 36
Content: 1× each counterbore No. 156730		5; 5.5; 6; 6.5; 7; 8; 9	8.5; 9.5; 10.5; 11.5; 13.5; 16.5	8.5; 9.5; 10.5; 11.5; 13.5; 16.5	14.5; 16.5; 18.5; 20.5; 22.5; 24.5	14.5; 16.5; 18.5; 20.5; 22.5; 24.5	26; 28; 30; 32; 33; 34; 36	26; 28; 30; 32; 33; 34; 36
1× each pilot No. 156750		2.4; 2.5; 2.7; 3; 3.3; 3.5; 4; 4.5	4; 4.5; 5; 5.5; 6; 6.5; 7; 7.5; 8; 8.5; 9; 9.5; 10; 10.5	4; 4.5; 5; 5.5; 6; 6.5; 7; 7.5; 8; 8.5; 9; 9.5; 10; 10.5	7; 7.5; 8; 8.5; 9; 9.5; 10; 10.5; 11; 11.5; 12; 13; 14; 15	7; 7.5; 8; 8.5; 9; 9.5; 10; 10.5; 11; 11.5; 12; 13; 14; 15	12; 13; 14; 15; 16; 17; 18; 19; 20; 21; 22; 23; 24; 25	12; 13; 14; 15; 16; 17; 18; 19; 20; 21; 22; 23; 24; 25
1× each holder No. 156720 with shank		∅ 10 mm	∅ 10 mm	MT1	∅ 12 mm	MT2	MT2	MT3

KOMET® 45° KWS countersinks for TOH.0902.. / 1403..

Application: For **deburring** round and long holes and for milling trapezoidal slots.
For countersinking to DIN fine for DIN screws M10 – M20.
Rigid mounting is required (not suitable for power drills).

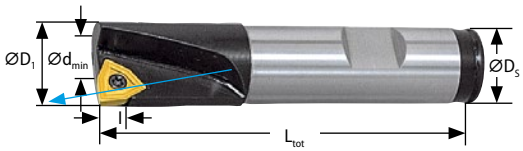
Note: For suitable triangular indexable inserts see 216700 / 216740 / 216770.



for DIN countersunk screws	24D 21 6600 KOMET® 45° countersink Weldon shank	Number of cutting edges Z	Ø D mm	Ø D_{max} mm	L_{tot} mm	Ø D_s h6 mm	suitable indexable insert	Indexable index 216700 / 216740 / 216770	Pack of insert screws
M10	XXX	2	7	19	100	16	TO.. 0902	14-6603	239653_8IP7 (1.3 Nm)
M12	XXX	2	11	23	100	16	TO.. 0902	14-6603	239653_8IP7 (1.3 Nm)
M14	XXX	1	11	26	100	16	TO.. 0902	14-660	239653_8IP7 (1.3 Nm)
M16	XXX	2	12	30	100	20	TO.. 1403	26-660	239653_10IP (2,8 Nm)
M18	XXX	2	16	34	100	20	TO.. 1403	26-660	239653_10IP (2,8 Nm)
M20	XXX	2	19	37	100	20	TO.. 1403	26-660	239653_10IP (2,8 Nm)

KOMET® Indexable countersinking mill KWZ for WOEX 0302.. / 05T3.. / 06T3.. / 0804..

Application: For producing counterbores for cylinder head screws to DIN 74 sheet 2, from M8 with through coolant feed.



Type	24D 21 6660 KOMET® countersinking mill Weldon shank	for DIN cylinder head screws	Number of cutting edges Z	Ø D_1 H13 mm	Ø d_{min} mm	maximum counterbore depth l mm	L_{tot} mm	Ø D_s h6 mm	Indexable index 216780 – 216910 / 216950	Pack of insert screws
M5N	XXX	M5	1	10	5.3	10	80	16	10-010 / 110	239652_6IP1 (1.0 Nm)
M6N	XXX	M6	1	11	6.4	10	80	16	10-010 / 110	239652_6IP1 (1.0 Nm)
M8	XXX	M8	1	15	8.4	14	80	16	24-010 / 110	239652_8IP2 (1.3 Nm)
M10	XXX	M10	1	18	10.4	16	80	16	24-010 / 110	239652_8IP2 (1.3 Nm)
M12	XXX	M12	1	20	13	20	100	25	24-010 / 110	239652_8IP2 (1.3 Nm)
M14	XXX	M14	2	24	15	19	100	25	24-010 / 110	239652_8IP2 (1.3 Nm)
M16	XXX	M16	2	26	17	21	100	25	24-010 / 110	239652_8IP2 (1.3 Nm)
M18	XXX	M18	2	30	19	23	100	25	34-010 / 110	239652_10IP1 (2.8 Nm)
M20	XXX	M20	2	33	21	25	100	25	42-010 / 110	239653_15IP3 (6.3 Nm)

KOMET® Unisix® carbide indexable inserts WOEX.. Type W28 / W29

Suitable for: Indexable countersinking mill No. 216660.

Note:
Size 17-010 – For indexable countersinks M5, M6 series up to March 2010.

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	Graphite GRP CRP
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	K	N
21 6780																	160	
21 6811	300	300	200	200	200	200	140	120						120	100	30	160	
21 6850				200	200	200	140	120						120	100	30		
21 6910				200	200	200								120	100	30		
21 6950	350	200	200															150

Cutter geometry:
- Cutting edge chamfered and honed
- Precision sintered, with double chip breaker

Designation type W28			10-010	10-110	17-010	24-010	24-110	34-010	34-110	42-010	42-110	
24T 21 6811	KOMET Unisix® indexable insert	BK6440	–	–	XXX	–	–	–	–	–	–	10
24T 21 6780		BK62	XXX	–	–	XXX	–	–	–	–	–	10
24T 21 6850		BK8425	XXX	–	–	XXX	–	XXX	–	XXX	–	10
24T 21 6910		BK7935	XXX	–	–	XXX	–	–	–	XXX	–	10
24T 21 6950		BK7710	–	XXX	–	–	XXX	–	XXX	–	XXX	10
ISO code indexable insert			WOEX 030204	WOEX 030204	WOEX 040204	WOEX 05T304	WOEX 05T304	WOEX 06T304	WOEX 06T304	WOEX 080404	WOEX 080404	

POWER CARD

Garant

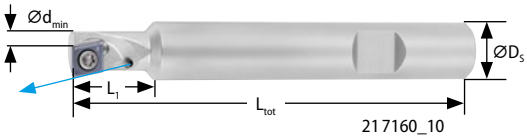
Forwards countersinking mill 180° for CCMT 060204 / 09T304 DIN 974-1 series 1 (for DIN hexagon socket screws)

Standard: DIN 974-1 series 1 (for DIN cylinder-head bolts).

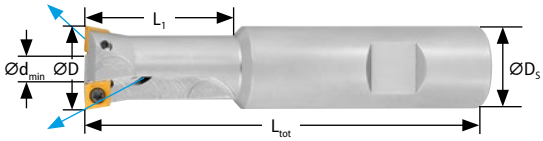
Note: The recommended indexable inserts have a corner radius of 0.4 mm. If indexable inserts with a different larger corner radius are used, the dimension Ø d_{min} (see table) will not be achieved!

Size 10–24 – Use GARANT torque screwdriver TQ No. **211750 size 1.2** with bit No. **674252 size 8IP**.

Size 25–42 – Use GARANT torque screwdriver TQ No. **211750 size 3.0** with bit No. **674252 size 15IP**.



21 7160_10



21 7160_15

Countersink Ø D	210 21 7160 180° forwards countersinking mill Weldon shank	for DIN cylinder head screws	Number of cutting edges Z	Ø d_{min}	L_1	L_{tot}	Ø D_s h6	suitable indexable insert	Insert screw
mm				mm	mm	mm	mm		
10	XXX	M5	1	4	15	85	12	260142 HB725	219842 (8IP; 1.2 Nm)
11	XXX	M6	1	4	15	85	12	260142 HB725	219842 (8IP; 1.2 Nm)
15	XXX	M8	2	5	30	92	12	260142 HB725	219842 (8IP; 1.2 Nm)
16	XXX	–	2	5	30	92	12	260142 HB725	219842 (8IP; 1.2 Nm)
17	XXX	–	2	6	32	94	16	260142 HB725	219842 (8IP; 1.2 Nm)
17,5	XXX	–	2	6.5	40	96	16	260142 HB725	219842 (8IP; 1.2 Nm)
18	XXX	M10	2	7	41	97	16	260142 HB725	219842 (8IP; 1.2 Nm)
19	XXX	–	2	8	41	100	16	260142 HB725	219842 (8IP; 1.2 Nm)
20	XXX	M12	2	9	41	102	16	260142 HB725	219842 (8IP; 1.2 Nm)
21	XXX	–	2	10	41	105	16	260142 HB725	219842 (8IP; 1.2 Nm)
22	XXX	–	2	11	41	110	16	260142 HB725	219842 (8IP; 1.2 Nm)
23	XXX	–	2	12	41	112	16	260142 HB725	219842 (8IP; 1.2 Nm)
24	XXX	M14	2	13	41	115	16	260142 HB725	219842 (8IP; 1.2 Nm)
25	XXX	–	2	8	40	120	16	260150 HB725	219844 (15IP; 3.0 Nm)
26	XXX	M16	2	9	55	125	20	260150 HB725	219844 (15IP; 3.0 Nm)
27	XXX	–	2	10	55	128	20	260150 HB725	219844 (15IP; 3.0 Nm)
28	XXX	–	2	11	55	130	20	260150 HB725	219844 (15IP; 3.0 Nm)
29	XXX	–	2	12	55	132	20	260150 HB725	219844 (15IP; 3.0 Nm)
30	XXX	M18	2	13	55	134	20	260150 HB725	219844 (15IP; 3.0 Nm)
31	XXX	–	2	14	55	136	20	260150 HB725	219844 (15IP; 3.0 Nm)
32	XXX	–	2	15	55	138	20	260150 HB725	219844 (15IP; 3.0 Nm)
33	XXX	M20	2	16	55	140	20	260150 HB725	219844 (15IP; 3.0 Nm)
34	XXX	–	2	16	60	140	25	260150 HB725	219844 (15IP; 3.0 Nm)
35	XXX	–	2	17	60	140	25	260150 HB725	219844 (15IP; 3.0 Nm)
36	XXX	–	2	18	60	140	25	260150 HB725	219844 (15IP; 3.0 Nm)
37	XXX	–	2	19	60	140	25	260150 HB725	219844 (15IP; 3.0 Nm)
38	XXX	–	2	20	60	140	25	260150 HB725	219844 (15IP; 3.0 Nm)
39	XXX	–	2	21	60	140	25	260150 HB725	219844 (15IP; 3.0 Nm)
40	XXX	M24	2	22	60	140	25	260150 HB725	219844 (15IP; 3.0 Nm)
41	XXX	–	2	23	60	140	25	260150 HB725	219844 (15IP; 3.0 Nm)
42	XXX	–	2	24	60	140	25	260150 HB725	219844 (15IP; 3.0 Nm)

POWER CARD

Reverse countersinking mill 180° for CPMT 05T1.. / CCMT 0602.. / 09T3.. / 1204..

With just one cutter (z = 1).

Size 15; 18 – Without internal cooling.

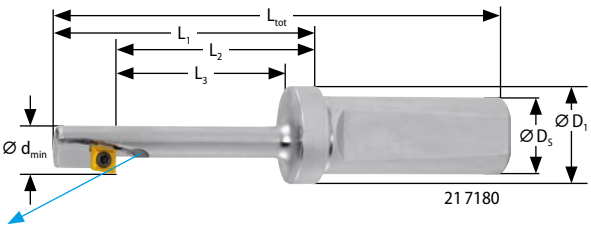
Note: Dimension e = programming dimension (information on the end face).

Size 15 – Use GARANT torque screwdriver TQ No. **211750 size 0.9** with bit No. **674248 size TX7**.

Size 18–30 – Use GARANT torque screwdriver TQ No. **211750 size 1.2** with bit No. **674252 size 8IP**.

Size 33–48 – Use GARANT torque screwdriver TQ No. **211750 size 3.0** with bit No. **674252 size 15IP**.

Size 53–76 – Use GARANT torque screwdriver TQ No. **211750 size 5.5** with bit No. **674252 size 20IP**.



maximum countersink Ø D mm	210 21 7180 180° reverse countersinking mill	Ø d_{min} mm	L_1 mm	L_2 mm	L_3 mm	Ø D_1 mm	e mm	L_{tot} mm	Ø D_s h6 mm	Shank type	suitable indexable insert	Insert screw	Pack of insert screws
15	XXX	9.2	55	42	35	25	3.55	105	20	Whistle Notch	217185 UNI	219947 (TX7; 0,9 Nm)	–
18	XXX	10.5	62	47	40	25	4.05	112	20	Whistle Notch	260142 HB725	219842 (8IP; 1.2 Nm)	–
20	XXX	13	67	52	45	25	3.8	117	20	Whistle Notch	260142 HB725	219842 (8IP; 1.2 Nm)	–
24	XXX	15	72	57	50	25	4.8	122	20	Whistle Notch	260142 HB725	219842 (8IP; 1.2 Nm)	–
26	XXX	17	82	67	60	25	5.05	132	20	Whistle Notch	260142 HB725	219842 (8IP; 1.2 Nm)	–
30	XXX	19	92	77	65	25	6.05	142	20	Whistle Notch	260142 HB725	219842 (8IP; 1.2 Nm)	–
33	XXX	21	102	82	75	25	6.65	152	20	Whistle Notch	260150 HB725	219844 (15IP; 3.0 Nm)	–
36	XXX	23	113	93	85	40	7.05	173	32	Whistle Notch	260150 HB725	219844 (15IP; 3.0 Nm)	–
40	XXX	25	123	103	95	40	8.05	183	32	Whistle Notch	260150 HB725	219844 (15IP; 3.0 Nm)	–
43	XXX	30	123	103	95	40	7.05	183	32	Whistle Notch	260150 HB725	219844 (15IP; 3.0 Nm)	–
48	XXX	33	163	143	135	40	8.05	223	32	Whistle Notch	260150 HB725	219844 (15IP; 3.0 Nm)	–
53	XXX	36	140	–	110	–	9.05	210	40	Weldon	260158 HB725	–	219848 (20IP; 5.5 Nm)
57	XXX	39	150	–	120	–	9.55	220	40	Weldon	260158 HB725	–	219848 (20IP; 5.5 Nm)
66	XXX	45	165	–	135	–	11.05	245	50	Weldon	260158 HB725	–	219848 (20IP; 5.5 Nm)
76	XXX	52	185	–	155	–	12.55	265	50	Weldon	260158 HB725	–	219848 (20IP; 5.5 Nm)

Insert for reverse countersinks No. 217180 size 15

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	CuZn	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	M	M	S	K	N						
21 7185		100	80	75	75	75	65	65					40	40	40	100	90	●		●	○		

Type			UNI	
21A 21 7185	CPMT 05T104 T	HB7035	XXX	10
f		mm/rev.	0.1	

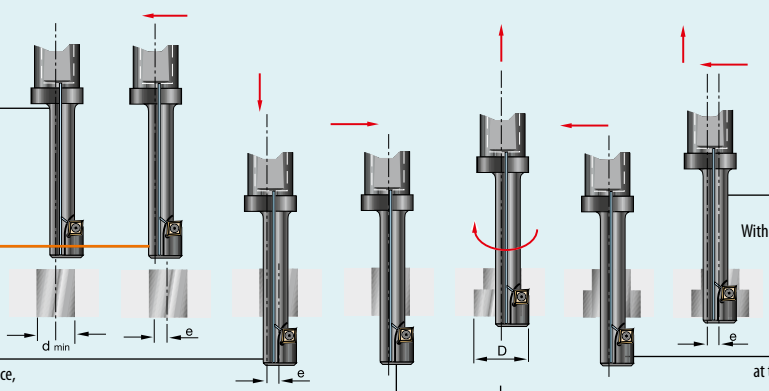
Reverse countersinking mill No. 21 7180 in use – programming amount (e)

1. Position
the tool at the centre of the hole, spindle orientation 0°.

2. Offset
the tool by the programmed amount (e).

3. Plunge
to the position below the lower edge of the workpiece, plus safety clearance. Spindle not rotating!

4. Return
to the centre of the hole by amount (e), then start the spindle.



5. Countersink
to the desired depth.

6. Position
at the safety distance under the workpiece lower edge. Spindle orientation 0°.

7. Offset
the tool by the programmed amount (e). Withdraw the milling cutter out through the component.

Reaming overview

Hand reamers

Colour ring							
Brand	HOLEX	Garant	Garant	HOLEX	HOLEX	HOLEX	Garant
Tool material	HSS	HSS	HSS	HSS	HSS	HSS	HSS
Coating							
Standard / DIN	206 B	859	Man. std	Man. std	9	204	Man. std
Version		adjustable	adjustable	Taper 1:10	Taper 1:50	Morse taper	NPT 1:16
Item number	16 0150	16 0500	16 0600	16 1000	16 1200	16 2500	16 2650
Catalogue page	192	193	193	194	194	195	195
Size range ∅ mm	2 – 40	4 – 30	6.4 – 67	3 – 35	1.1 – 30.7	MT0 – MT4	1/8" – 1"
Hole tolerance H7	●						
∅ dimension 1/100							
Configurability	16 0200						
conf. nominal ∅ mm	0,95 – 60,2						
Aluminium, plastics N	○	○	○	○	○	○	○
Steel < 500 N/mm² P	●	●	●	●	●	●	●
Steel < 900 N/mm² P	○	○	○	○	○	○	○
Steel < 1400 N/mm² P							
Steel > 45 HRC H							
INOX M							
Ti S							
GG (G) K							
CuZn N							
Graphite, GRP, CRP N							
UNI							

Machine reamers

Colour ring												
Brand	HOLEX	HOLEX	HOLEX	Garant	Garant	Garant	Garant	Garant	Garant	Garant	Garant	Garant
Tool material	HSS	HSS-E	HSS-E	HSS-E	HSS-E	HSS-E	HSS-E	HSS-E	HSS-E	Solid carbide/Carbide	Solid carbide	Solid carbide
Coating					TiN							TiAlN
Standard / DIN	311	2179	208 B	212 B	212 B	Man. std	Man. std	Man. std	Man. std	8093	Man. std	Man. std
Version	Rivet hole	Taper 1:50				extra long	extra long	Face	NC shank	Carbide–tipped		
Item number	16 2800	16 1600	16 4000	16 3000	16 3500	16 2961	16 2971	16 2825	16 2900	16 4500	16 4340	16 4341
Catalogue page	196	195	202	201	201	200	200	196	197 – 200	203	204 – 206	204 – 206
Size range ∅ mm	6.4 – 40	1.9 – 16	5 – 50	1.5 – 20	4 – 20	2 – 12	2 – 12	3 – 12	1 – 20	1 – 16	0.6 – 20	0.98 – 20
Hole tolerance H7			●	●	●	●	●	●	●	●	●	●
∅ dimension 1/100									16 2902		●	●
Configurability			16 4180						16 2951		16 4345	16 4344
conf. nominal ∅ mm			2,81 – 50						0,95 – 20		0,95 – 20,2	0,95 – 20,2
Aluminium, plastics N	○	●	○	○		○	○	○	○	○	●	
Steel < 500 N/mm² P	●	●	○	○	○	○	○	●	○	○	●	●
Steel < 900 N/mm² P	○	○	●	●	●	●	●	●	●	●	●	●
Steel < 1400 N/mm² P			○	○	○	○	○	○	○	●	●	●
Steel > 45 HRC H												
INOX M			○	○		●	●		●	○	○	●
Ti S			○	○	○	○	○		○		●	○
GG (G) K			○	○	○	○	○	○	○		●	●
CuZn N			○	○	○	○	○	○	○	●	●	●
Graphite, GRP, CRP N												
UNI			●	●		●	●	●	●		●	●

● = highly suitable; ○ = suitable only under restricted conditions
The areas of application are starting points for pre-selection.

Garant KOMET Reaming overview

		HPC reamers								
Colour ring										
			new GARANT Master Alu						new GARANT Master Steel	
Brand		Garant	Garant	Garant	Garant	Garant	Garant	Garant	Garant	Garant
Tool material		HSS	Solid carbide	Solid carbide	Solid carbide	Solid carbide	Solid carbide	Solid carbide	Solid carbide	Solid carbide
Coating		TiAlN	DLC	DLC	TiAlN	TiAlN	TiAlN	Diamond	TiAlN	TiAlN
Standard / DIN		Man. std	Man. std	Man. std	Man. std	Man. std	Man. std	Man. std	Man. std	Man. std
Through hole		164358	164400	164346	164348	164350	164352	164355	164420	164362
Blind hole		164359	164405	164347		164351		164357	164425	164392
Catalogue page		207	208	210	210	211	211	212	209	213
Size range ∅	mm	6 – 40	4 – 20	4 – 20	4 – 20	4 – 20	4 – 20	4 – 20	4 – 20	3.97 – 20
Through-coolant supply		IC	IC	IC	IC	IC	IC	IC	IC	IC
Hole tolerance H7		●	●	●	●	●	●		●	●
∅ dimension 1/100										●
Configurability		●	●	●	●	●	●	●	●	
conf. nominal ∅	mm	6 – 40.2	3.7 – 20.2	3.7 – 20.2	3.7 – 20.2	3.7 – 20.2	3.7 – 20.2	3.7 – 20.2	3.7 – 20.2	
Aluminium, plastics	N		●	●				●		
Steel < 500 N/mm²	P	●							●	●
Steel < 900 N/mm²	P	●							●	●
Steel < 1400 N/mm²	P	●			○				●	○
Steel > 45 HRC	H				●					
INOX	M					●			●	
Ti	S						●			
GG (G)	K	●							●	●
CuZn	N	○							○	○
Graphite, GRP, CRP	N							●		
UNI		●							●	●

		TopCut REAM interchangeable head reamers			REAMAX TS interchangeable head reamers				
Colour ring									
Brand		Garant	Garant	Garant	KOMET	KOMET	KOMET	KOMET	KOMET
Tool material		Solid carbide	Solid carbide	Cermet	Solid carbide	Cermet	Cermet	Solid carbide	Solid carbide
Coating		TiAlN	TiAlN		DLC			TiAlN	TiN
Standard / DIN		Man. std	Man. std	Man. std					
Through hole		239720	239730	239710	239805	239811	239816	239822	239826
Blind hole		239725	239735	239715	239805	239811		239822	239826
Catalogue page		214	214	214	215	215	215	215	215
Size range ∅	mm	10 – 26*	10 – 26*	10 – 50*	18 – 50	18 – 50	18 – 50	18 – 50	18 – 50
Through-coolant supply		IC	IC	IC	IC	IC	IC	IC	IC
Hole tolerance H7		●	●	●	●	●	●	●	●
		*Blind holes from ∅ 15 mm							
Aluminium, plastics	N				●				
Steel < 500 N/mm²	P			●		●	●		○
Steel < 900 N/mm²	P	●		●		●	●		○
Steel < 1400 N/mm²	P	○				○			
Steel > 45 HRC	H							○	
INOX	M		●						○
Ti	S								
GG (G)	K	●		○		○		●	
CuZn	N								●
Graphite, GRP, CRP	N								
UNI									●

● = highly suitable; ○ = suitable only under restricted conditions
The areas of application are starting points for pre-selection.

H7 | HSS | DIN 206 B | 7-8°

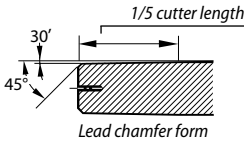
HOLEX Hand reamers

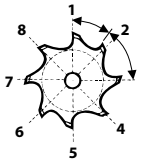
With **left-hand helix** 7 – 8° and long taper lead, more than 1/5 of the cutting length. An even number of teeth with irregular spacing for accurately round holes, free of chatter. The cylindrical ground chamfer on the plain cutting section smooths the hole and guides the reamer.

Application: For through holes (not for blind holes). Also very suitable for interrupted holes.

Note: Hand reamers **finish ground to match your specifications** can be ordered as **No. 160200**.
For suitable tap wrenches see article No. 148150; 148200; 148410 and extensions No.149400.

160150





Even number of teeth with irregular spacing – pairs of teeth are exactly opposite each other; e. g. teeth 1 and 5.

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	Graphite GRP CRP	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	N						
160150		●		●	●	○													●			○	

Nominal ∅ mm	120	160150 Hand reamer H7	L_s mm	L_{tot} mm	mm
2		XXX	25	50	1.6
2,5		XXX	29	58	2
3		XXX	31	62	2.24
3,5		XXX	35	71	2.8
4		XXX	38	76	3.15
4,5		XXX	41	81	3.55
5		XXX	44	87	4
5,5		XXX	47	93	4.5
6		XXX	47	93	4.5
6,5		XXX	50	100	5
7		XXX	54	107	5.6
8		XXX	58	115	6.3
8,5		XXX	58	115	6.3
9		XXX	62	124	7.1
10		XXX	66	133	8
11		XXX	71	142	9
12		XXX	76	152	10

Nominal ∅ mm	120	160150 Hand reamer H7	L_s mm	L_{tot} mm	mm
13		XXX	76	152	10
14		XXX	81	163	11.2
15		XXX	81	163	11.2
16		XXX	87	175	12.5
17		XXX	87	175	12.5
18		XXX	93	188	14
19		XXX	93	188	14
20		XXX	100	201	16
22		XXX	107	215	18
24		XXX	115	231	20
25		XXX	115	231	20
26		XXX	115	231	20
28		XXX	124	247	22.4
30		XXX	124	247	22.4
32		XXX	133	265	25
35		XXX	142	284	28
40		XXX	152	305	31.5

H7 | HSS | DIN 206 B | 7-8°

HOLEX Hand reamer set

With **left-hand helix** 7 – 8° and long taper lead, more than 1/5 of the cutting length. An even number of teeth with irregular spacing for accurately round holes, free of chatter. The cylindrical ground land on the plain cutting section smooths the hole and guides the reamer.

Application: For through holes (not for blind holes). Also very suitable for interrupted holes.

Supplied with: 6-piece hand reamer set in a box.

160175

Number of reamers		6
120 160175	Hand reamer set No. 160150 in a box H7	XXX
Content: 1 pc. each hand reamer		Size 3; 4; 5; 6; 8; 10

HSS | DIN 859 | 7–8°

Garant Re-adjustable hand reamers

Up to 5 mm with straight flutes; from 6 mm with **left hand helix** 7 – 8°. The reamer body is slit and can be adjusted by approx. 1/100 of the reamer ∅ using the expansion screw (e.g. 20 mm ∅ = 0.2 mm).

Application: For opening through holes to a slight oversize. Use the straight fluted reamers only in holes which are not interrupted. Make sure that the screw is not left tightened when stored.

16 0500

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	Graphite GRP CRP	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	N						
16 0500		●		●	●	○													●			○	

Nominal ∅ mm	110 16 0500 Re-adjustable hand reamer	L_s mm	L_{tot} mm	mm
4	XXX	24	76	3.15
5	XXX	30	87	4
6	XXX	33	93	4.5
7	(XXX)	38	107	5.6
8	XXX	42	115	6.3
9	(XXX)	46	124	7.1
10	XXX	50	133	8

Nominal ∅ mm	110 16 0500 Re-adjustable hand reamer	L_s mm	L_{tot} mm	mm
11	(XXX)	51	142	9
12	XXX	56	152	10
14	XXX	61	163	11.2
15	XXX	61	163	11.2
16	XXX	67	175	12.5
17	(XXX)	67	175	12.5
18	(XXX)	68	188	14

Nominal ∅ mm	110 16 0500 Re-adjustable hand reamer	L_s mm	L_{tot} mm	mm
19	(XXX)	68	188	14
20	XXX	75	201	16
22	(XXX)	82	215	18
24	(XXX)	85	231	20
25	(XXX)	85	231	20
28	(XXX)	94	247	22.4
30	XXX	94	247	22.4

Garant Adjustable hand reamers

HSS | Standard

16 0600 – Large adjustment range. Fine adjustment using ring gauges or micrometers. Tools with taper lead; the flutes are relieved and cylindrically ground.

Suitable for:

16 0700/0750 – Hand reamer No. 160600

16 0600

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	Graphite GRP CRP	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	N						
16 0600		●		●	●	○													●			○	

∅ mm	110 16 0600 Adjustable hand reamer	110 16 0700 Spare blade set	110 16 0750 Spare nut	Adjustment range ∅ 16 0600 mm	L_s 16 0600 mm	L_{tot} 16 0600 mm	16 0600 mm
6,4	XXX	(XXX)	(XXX)	6.4 – 7.2	32	110	3
7,2	XXX	(XXX)	(XXX)	7.2 – 8	32	110	3.4
8	XXX	(XXX)	(XXX)	8 – 9	34	115	3.8
9	XXX	(XXX)	(XXX)	9 – 10	34	115	4.3
10	XXX	(XXX)	(XXX)	10 – 11	34	115	4.9
11	XXX	(XXX)	(XXX)	11 – 12	35	125	4.9
12	XXX	(XXX)	(XXX)	12 – 13.5	41	135	6.2
13,5	XXX	(XXX)	(XXX)	13.5 – 15.5	50	146	7
15,5	XXX	(XXX)	(XXX)	15.5 – 18	60	166	8
18	XXX	(XXX)	(XXX)	18 – 21	65	178	9
21	XXX	(XXX)	(XXX)	21 – 24	76	195	11
24	XXX	(XXX)	(XXX)	24 – 27.5	82	218	12
27,5	XXX	(XXX)	(XXX)	27.5 – 31.5	86	245	14.5
31,5	XXX	(XXX)	(XXX)	31.5 – 37	98	280	18
37	XXX	(XXX)	(XXX)	37 – 45	108	325	20
45	XXX	(XXX)	(XXX)	45 – 55	118	370	26
55	XXX	(XXX)	(XXX)	55 – 67	125	400	32

HSS | Standard

Garant Adjustable hand reamer sets in a wooden box

Assortment of hand reamers No. 160600.

Number of reamers		11	13
110 16 0800	Adjustable hand reamer set, in a wooden box	XXX	XXX
∅ range	mm	8 – 31.5	8 – 45

16 0800

HSS | Standard | 1:10

HOLEX Taper reamers

Straight fluted hand reamer with conically increasing cutting edges (1 mm over 10 mm length).

Application: For reaming conical holes or uninterrupted holes prepared in steps.
Not for parallel holes.

16 1000

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	Graphite GRP CRP	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	N						
16 1000		●		●	●	○													●			○	

small × large Ø	120	16 1000	L_s	L_{tot}		small × large Ø	120	16 1000	L_s	L_{tot}	
		Taper reamer 1:10						Taper reamer 1:10			
mm			mm	mm	mm	mm			mm	mm	mm
3×10		XXX	70	100	6.3	10×25		XXX	150	195	16
5×15		XXX	100	140	10	15×35		(XXX)	200	250	22.4

HSS | DIN 9 | 1:50

HOLEX Taper pin hand reamers

Conically increasing cutting edges (1 mm over 50 mm length).
Size1.2 – 2.5 – **straight flutes. Form A.**
Size3 – 25 – **helical flutes. Form B.**

Application: For reaming tapered holes by hand for taper pins to ISO 2339 (DIN 1), DIN 258, 1447, ISO 8736, 8737 (DIN 7977, 7978).

Recommendation: The pre-drilled hole is best produced using a straight shank taper pin drill No. 116310.

16 1200

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	Graphite GRP CRP	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	N						
16 1200		●		●	●	○													○			○	

Nominal Ø	120	16 1200	small Ø	large Ø	L_s	L_{tot}		Nominal Ø	120	16 1200	small Ø	large Ø	L_s	L_{tot}	
		Taper pin hand reamer 1:50								Taper pin hand reamer 1:50					
mm			mm	mm	mm	mm	mm	mm			mm	mm	mm	mm	mm
1,2		XXX	1.1	1.74	32	50	2.5	8		XXX	7.9	10.8	145	180	8
1,5		XXX	1.4	2.14	37	57	2.5	10		XXX	9.9	13.4	175	215	10
2		XXX	1.9	2.86	48	68	2.5	12		XXX	11.8	16	210	255	11.2
2,5		XXX	2.4	3.36	48	68	2.5	14		XXX	13.8	18	210	255	12.5
3		XXX	2.9	4.06	58	80	3.15	16		XXX	15.8	20.4	230	280	14
4		XXX	3.9	5.26	68	93	4	20		XXX	19.8	24.8	250	310	18
5		XXX	4.9	6.36	73	100	5	25		(XXX)	24.7	30.7	300	370	22.4
6		XXX	5.9	8	105	135	6.3								

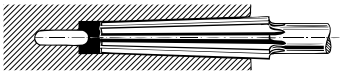
HSS | DIN 204

HOLEX Morse taper hand reamers

Straight flutes, with plain shank and square drive.

Application: For reaming Morse taper sockets from taper holes or stepped holes.

16 2500



Reaming a Morse taper with the Morse taper socket reamer No. 16 2500

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	Graphite GRP CRP	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	N						
16 2500		●		●	●	○													●			○	

MT	120 16 2500 Morse taper reamer	L_s mm	L_{tot} mm	mm
MK0	XXX	61	93	6.2
MK1	XXX	66	102	8
MK2	XXX	79	121	11

MT	120 16 2500 Morse taper reamer	L_s mm	L_{tot} mm	mm
MK3	XXX	96	146	16
MK4	XXX	119	179	20

HSS | Standard | 1:16

Garant NPT hand reamers

For preparing conical NPT threads. Spiral version, with plain shank and square drive.

16 2650

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	Graphite GRP CRP	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	N						
16 2650		●		●	●	○													●			○	

NPT	110 16 2650 NPT reamer 1:16	small Ø mm	large Ø mm	L_s mm	L_{tot} mm	mm	mm
1/8	XXX	8.05	9.1	17	70	5.5	7
1/4	XXX	10.3	12	27	80	9	11
3/8	XXX	13.75	15.4	27	85	9	12

NPT	110 16 2650 NPT reamer 1:16	small Ø mm	large Ø mm	L_s mm	L_{tot} mm	mm	mm
1/2	XXX	16.95	19.1	35	95	12	16
3/4	XXX	22.25	24.5	35	105	16	20
1	XXX	28	30.7	43	130	20	25

HSS E | DIN 2179 | 45° | 1:50 | h9

HOLEX Taper pin machine reamers

With 45° **left hand helix,** evacuates swarf in cutting direction.

Application: **On machines** for tapered through holes. The peeling twist requires removal of a thick chip (pre-drilled hole must not be too large). For taper pins to ISO 2339, 8736, 8737 (DIN 1, 7977, 7978), DIN 258 and 1447.

Recommendation: The pre-drilled hole is best produced using a straight shank taper pin drill No. 116310.

16 1600

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	Graphite GRP CRP	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	N						
16 1600	18	13		11	7	7													●	●			

Nominal Ø mm	120 16 1600 Machine taper pin reamer	small Ø mm	large Ø mm	L_s mm	L_{tot} mm	mm	< 500 N f mm/rev.
2	XXX	1.9	2.86	48	86	3.15	0.1
2,5	XXX	2.4	3.36	48	86	3.15	0.1
3	XXX	2.9	4.06	58	100	4	0.1
4	XXX	3.9	5.26	68	112	5	0.1
5	XXX	4.9	6.36	73	122	6.3	0.1

Nominal Ø mm	120 16 1600 Machine taper pin reamer	small Ø mm	large Ø mm	L_s mm	L_{tot} mm	mm	< 500 N f mm/rev.
6	XXX	5.9	8	105	160	8	0.1
8	XXX	7.9	10.8	145	207	10	0.13
10	XXX	9.9	13.4	175	245	12.5	0.15
12	XXX	11.8	16	210	290	16	0.15

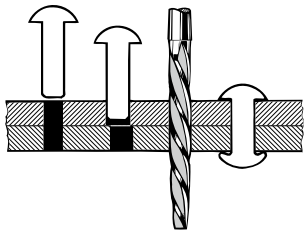
HSS | DIN 311 | 25° | k11 | MT1-4

HOLEX Bridge reamers with Morse taper shank

16 2800

Tapering flute form with a length of approx. 3×nominal ∅. Very sturdy due to strong core and radius heel of flutes. Easy, peeling cut by spiral flutes; number of flutes varies according to the size.

Application: Particularly useful for the installation of components; for reaming offset holes or enlarging rivet holes. Bridge reamers are used on pneumatic hand-held drills in boiler construction.



Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	Graphite GRP CRP	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	N						
16 2800		13		11	7	7													●	●			

Nominal ∅ k11	120 16 2800 Bridge reamer	Minor ∅	L_A	L_{tot}	Number of cutting edges Z	MT	< 500 N f
mm		mm	mm	mm			mm/rev.
6,4	(XXX)	4.5	85.5	151	3	1	0.12
7,4	(XXX)	5.2	90.5	156	3	1	0.12
8,4	(XXX)	5.9	95.5	161	3	1	0.12
9,5	(XXX)	6.8	100.5	166	4	1	0.15
10	(XXX)	7	105.5	171	4	1	0.15
11	(XXX)	7.7	110.5	176	4	1	0.15
12	(XXX)	8.1	119	199	4	2	0.15
13	XXX	9.1	119	199	4	2	0.15
14	XXX	9.8	129	209	4	2	0.15
15	(XXX)	10.5	139	219	4	2	0.2
16	XXX	11.2	149	229	4	2	0.2
17	XXX	11.9	152	251	4	3	0.2
18	XXX	12.2	162	261	4	3	0.2
19	(XXX)	13.2	162	261	4	3	0.2
20	XXX	13.8	172	271	4	3	0.25

Nominal ∅ k11	120 16 2800 Bridge reamer	Minor ∅	L_A	L_{tot}	Number of cutting edges Z	MT	< 500 N f
mm		mm	mm	mm			mm/rev.
21	XXX	14.8	172	271	4	3	0.25
22	XXX	15.4	182	281	4	3	0.25
23	(XXX)	16.4	182	281	4	3	0.25
24	(XXX)	16.8	197	296	4	3	0.25
25	XXX	17.8	197	296	4	3	0.25
26	XXX	18.8	197	296	4	3	0.25
27	(XXX)	19.2	212	311	4	3	0.25
28	XXX	20.2	212	311	4	3	0.25
30	(XXX)	22.2	212	311	5	3	0.3
31	(XXX)	22.6	227	326	5	3	0.3
32	(XXX)	23.6	230	354	5	4	0.3
33	(XXX)	24.6	230	354	5	4	0.3
34	(XXX)	25.2	240	364	5	4	0.3
37	(XXX)	28.2	240	364	5	4	0.35
40	(XXX)	30.8	250	374	5	4	0.35

H7 | HSS E | Standard | e9 | 6

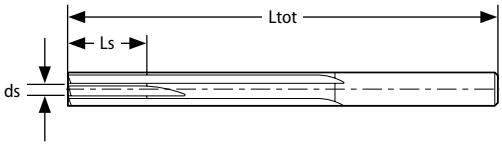
Garant Machine face reamers

Chucking reamer cutting on the end face to achieve the most **accurate size possible.** The **optimised end face cutting** enables a **precise alignment fit** of the hole that is produced. Straight flute machine chucking reamers with **long flutes** for optimum chip evacuation.

Application: For production of sequential holes with alignments that exactly match. For the highest demands for straightness of holes. For reaming of through holes and right to the bottom of blind holes.

Note: No. 162830 Configurable reamers are available in the diameter range from 2.200 to 12.220 mm and for any choice of fit.

16 2825



Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	GG(G)	CuZn	Uni					
ISO code	N	N	N	N	P	P	P	P	P	H	H	H	H	H	M	K	N						
16 2825	25	15			12	12	12	10	10							10	20	●	●	●	●	○	

Nominal ∅	110 16 2825 Face reamer	d_s	L_s	L_{tot}		< 900 N f	< 900 N Hole ∅
mm	H7	mm	mm	mm	mm	mm/rev.	mm
3	XXX	1.5	12	61	3	0.1	2.9
4	XXX	1.7	16	75	4	0.1	3.9
5	XXX	1.7	20	86	5	0.1	4.85
6	XXX	2	20	93	6	0.15	5.85
7	XXX	2.5	22	109	7	0.15	6.85

Nominal ∅	110 16 2825 Face reamer	d_s	L_s	L_{tot}		< 900 N f	< 900 N Hole ∅
mm	H7	mm	mm	mm	mm	mm/rev.	mm
8	XXX	3	24	117	8	0.15	7.85
9	XXX	3.5	24	125	9	0.2	8,8
10	XXX	4.5	26	133	10	0.2	9.8
11	XXX	4.5	26	142	11	0.2	10.8
12	XXX	4.5	26	151	12	0.2	11.8

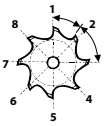
H7 | HSS E | Standard | h6 DIN 1835 A

Garant

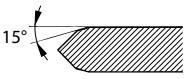
NC machine reamers with whole-number shank Ø

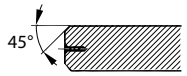
Version suitable for NC similar to DIN 212 **with straight shank Ø** for **standard chucking** especially in **hydraulic chucks** or **high precision collet chucks.** For **highest concentricity** and **process reliability. No need to order special collets.**
With long flutes and left-hand helix.
≤ Ø size 1.7 with 3 teeth; ≥ Ø size 1.8 even number of teeth and irregular spacing. ≤ Ø size 3.7 both ends with centre points; ≥ Ø size 3.8 both ends with centre holes.
Reamer manufacturing tolerance to DIN 1420 for H7 hole tolerance.

Note: For reamers in **1/100 sizes** see **No. 162902.**
For reamers with **diameters and fits to specification** see **No. 162951**



Even number of teeth with uneven spacing – pairs of teeth are exactly opposite each other; e.g. teeth 1 and 5.





Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	CuZn	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	M	M	S	K	N						
16 2900	18	13	11	11	7	7	5	4					5	5	5	5	13	●	●	●			

Nominal Ø	110 16 2900 NC reamer H7	Inch Ø ≙	L_A	L_{tot}	Number of cutting edges Z		< 750 N f	< 750 N Drill Ø
mm		mm	mm	mm		mm	mm/rev.	mm
1	XXX	–	16	35	3	1	0.1	0.9
1,1	XXX	–	21	40	3	2	0.1	1
1,2	XXX	–	21	40	3	2	0.1	1.1
1,3	XXX	–	21	40	3	2	0.1	1.2
1,4	XXX	–	21	40	3	2	0.1	1.3
1,5	XXX	–	21	40	3	2	0.1	1.4
1/16	XXX	1.588	23	43	3	2	0.1	1.5
1,6	XXX	–	23	43	3	2	0.1	1.5
1,7	XXX	–	23	43	3	2	0.1	1.6
1,8	XXX	–	23	46	4	2	0.1	1.7
1,9	XXX	–	23	46	4	2	0.1	1.8
2	XXX	–	26	49	4	2	0.1	1.9
2,1	XXX	–	26	49	4	2	0.1	2
2,2	XXX	–	26	53	4	3	0.1	2.1
2,3	XXX	–	26	53	4	3	0.1	2.2
3/32	XXX	2.381	26	53	4	3	0.1	2.3
2,4	XXX	–	27	57	4	3	0.1	2.3
2,5	XXX	–	27	57	4	3	0.1	2.4
2,6	XXX	–	27	57	4	3	0.1	2.5
2,7	XXX	–	33	61	6	3	0.1	2.6
2,8	XXX	–	33	61	6	3	0.1	2.7
2,9	XXX	–	33	61	6	3	0.1	2.8
3	XXX	–	33	61	6	3	0.1	2.9
3,1	XXX	–	37	65	6	4	0.1	3
1/8	XXX	3.175	37	65	6	4	0.1	3.1
3,2	XXX	–	37	65	6	4	0.1	3.1
3,3	XXX	–	37	65	6	4	0.1	3.2
3,4	XXX	–	42	70	6	4	0.1	3.3
3,5	XXX	–	42	70	6	4	0.1	3.4
3,6	XXX	–	42	70	6	4	0.1	3.5
3,7	XXX	–	42	70	6	4	0.1	3.6
3,8	XXX	–	46	75	6	4	0.1	3.7
3,9	XXX	–	46	75	6	4	0.1	3.8
5/32	XXX	3.969	46	75	6	4	0.1	3.9
4	XXX	–	46	75	6	4	0.1	3.9
4,1	XXX	–	46	75	6	4	0.1	4
4,2	XXX	–	46	75	6	4	0.1	4.1
4,3	XXX	–	51	80	6	5	0.1	4.2
4,4	XXX	–	51	80	6	5	0.1	4.3
4,5	XXX	–	51	80	6	5	0.1	4.4
4,6	XXX	–	51	80	6	5	0.1	4.5
4,7	XXX	–	51	80	6	5	0.1	4.6
3/16	XXX	4.763	57	86	6	5	0.1	4.6
4,8	XXX	–	57	86	6	5	0.1	4.7
4,9	XXX	–	57	86	6	5	0.1	4.8
5	XXX	–	57	86	6	5	0.1	4.9
5,1	XXX	–	57	86	6	5	0.1	4.9
5,2	XXX	–	57	86	6	5	0.1	5
5,3	XXX	–	57	86	6	5	0.1	5.1
5,4	XXX	–	56	93	6	6	0.1	5.2
5,5	XXX	–	56	93	6	6	0.1	5.3
7/32	XXX	5.556	56	93	6	6	0.1	5.4
5,6	XXX	–	56	93	6	6	0.1	5.4
5,7	XXX	–	56	93	6	6	0.1	5.5
5,8	XXX	–	56	93	6	6	0.1	5.6
5,9	XXX	–	56	93	6	6	0.1	5.7
6	XXX	–	56	93	6	6	0.1	5.8
6,1	XXX	–	64	101	6	6	0.1	5.9
6,2	XXX	–	64	101	6	6	0.1	6
6,3	XXX	–	64	101	6	6	0.1	6.1
1/4	XXX	6.35	64	101	6	6	0.1	6.2
6,4	XXX	–	64	101	6	6	0.1	6.2
6,5	XXX	–	64	101	6	6	0.1	6.3

Nominal Ø	110 16 2900 NC reamer H7	Inch Ø ≙	L_A	L_{tot}	Number of cutting edges Z		< 750 N f	< 750 N Drill Ø
mm		mm	mm	mm		mm	mm/rev.	mm
6,6	XXX	–	64	101	6	6	0.1	6.4
6,7	XXX	–	64	101	6	6	0.1	6.5
6,8	XXX	–	71	109	6	8	0.1	6.6
6,9	XXX	–	71	109	6	8	0.1	6.7
7	XXX	–	71	109	6	8	0.1	6.8
7,1	XXX	–	71	109	6	8	0.1	6.9
9/32	XXX	7.144	71	109	6	8	0.1	7
7,2	XXX	–	71	109	6	8	0.1	7
7,3	XXX	–	71	109	6	8	0.1	7.1
7,4	XXX	–	71	109	6	8	0.1	7.2
7,5	XXX	–	71	109	6	8	0.1	7.3
7,6	XXX	–	80	117	6	8	0.1	7.4
7,7	XXX	–	80	117	6	8	0.1	7.5
7,8	XXX	–	80	117	6	8	0.1	7.6
7,9	XXX	–	80	117	6	8	0.1	7.7
5/16	XXX	7.938	80	117	6	8	0.1	7.8
8	XXX	–	80	117	6	8	0.13	7.8
8,1	XXX	–	80	117	6	8	0.13	7.9
8,2	XXX	–	80	117	6	8	0.13	8
8,3	XXX	–	80	117	6	8	0.13	8.1
8,4	XXX	–	80	117	6	8	0.13	8.2
8,5	XXX	–	80	117	6	8	0.13	8.3
8,6	XXX	–	83	125	6	10	0.13	8.4
8,7	XXX	–	83	125	6	10	0.13	8.5
11/32	XXX	8.731	83	125	6	10	0.13	8.6
8,8	XXX	–	83	125	6	10	0.13	8.6
8,9	XXX	–	83	125	6	10	0.13	8.7
9	XXX	–	83	125	6	10	0.13	8.8
9,1	XXX	–	83	125	6	10	0.13	8.9
9,2	XXX	–	83	125	6	10	0.13	9
9,3	XXX	–	83	125	6	10	0.13	9.1
9,4	XXX	–	83	125	6	10	0.13	9.2
9,5	XXX	–	83	125	6	10	0.13	9.3
3/8	XXX	9.525	91	133	6	10	0.13	9.3
9,6	XXX	–	91	133	6	10	0.13	9.4
9,7	XXX	–	91	133	6	10	0.13	9.5
9,8	XXX	–	91	133	6	10	0.13	9.6
9,9	XXX	–	91	133	6	10	0.13	9.7
10	XXX	–	91	133	6	10	0.15	9.8
10,1	XXX	–	91	133	6	10	0.15	9.9
10,2	XXX	–	91	133	6	10	0.15	10
13/32	XXX	10.32	91	133	6	10	0.15	10.1
10,5	XXX	–	91	133	6	10	0.15	10.3
11	XXX	–	101	142	6	10	0.15	10.8
7/16	XXX	11.11	101	142	6	10	0.15	10.9
11,5	XXX	–	101	142	6	10	0.15	11.3
12	XXX	–	110	151	6	10	0.15	11.8
12,1	XXX	–	110	151	6	10	0.15	11.9
12,2	XXX	–	110	151	6	10	0.15	12
12,5	XXX	–	110	151	6	10	0.15	12.3
1/2	XXX	12.7	110	151	6	10	0.15	12.5
12,7	XXX	–	110	151	6	10	0.15	12.5
13	XXX	–	110	151	6	10	0.15	12.8
14	XXX	–	112	160	8	14	0.15	13.8
9/16	XXX	14.29	112	160	8	14	0.15	14.1
15	XXX	–	114	162	8	14	0.2	14.8
5/8	XXX	15.88	123	170	8	14	0.2	15.7
16	XXX	–	123	170	8	14	0.2	15.8
17	XXX	–	128	175	8	14	0.2	16.8
18	XXX	–	135	182	8	14	0.2	17.8
19	XXX	–	139	189	8	16	0.2	18.8
20	XXX	–	145	195	8	16	0.25	19.8

H7 | HSS E | Standard | h6 DIN 1835 A

Garant NC machine reamer set with whole-number shank Ø

Version suitable for NC similar to DIN 212 **with straight shank Ø** for **standard chucking** especially in **hydraulic chucks** or **high precision collet chucks.** For **highest concentricity** and **process reliability. No need to order special collets.** With long flutes and left-hand helix. Even number of teeth with irregular spacing. Size 3 with centring tip, from size 4 with centre holes at both ends.
Reamer manufacturing tolerance to DIN 1420 for H7 hole tolerance field.
Supplied with: 6-piece NC reamer set in a box.

16 2925

Number of reamers		6
110 16 2925	NC reamer set No. 162900 in a box **H7**	XXX
Content: 1 pc. each NC reamer		Size 3; 4; 5; 6; 8; 10

HSS E | Standard | h6 DIN 1835 A

0 +0.004 | 0 +0.005

Garant NC machine reamers, whole-number shank Ø in 1/100 sizes with defined tolerance

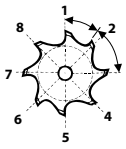
Reamers such as 162900, but in 1/100 sizes.
Version suitable for NC similar to DIN 212 **with straight shank Ø** for **standard chucking** especially in **hydraulic chucks** or **high precision collet chucks.**
For **highest concentricity** and **process reliability.**
No need to order special collets.
With long flutes and left-hand helix.
Reamer manufacturing tolerances:
≤ Ø 5.50 mm: 0 / +0.004 mm
> Ø 5.50 mm: 0 / +0.005 mm
Ordering example:
Desired Ø 6.24 mm - Ordering particulars: Item number 162902 6.24.
A reamer with 6.24 mm in tolerance 0 / +0.005 mm is delivered.
Delivery time ex stock if available or max. 1 working week.

The diameter necessary for the desired fit can be seen from the table below (page 199).
Often one reamer also covers further fits, since the tolerance bands overlap.

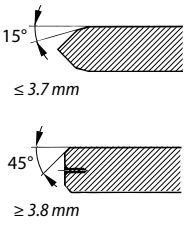
Note: Reamers in whole number sizes and 1/10 sizes for **H7 fit** see **No. 162900.**
For reamers with diameters and **fits to specification** see **No. 162951.**

≤ 3.7 mm — 16 2902

≥ 3.8 mm — 16 2902



Even number of teeth with irregular spacing – teeth are exactly opposite each other; e. g. teeth 1 and 5.



Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	CuZn	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	M	M	S	K	N						
16 2902	18	13	11	11	7	7	5	4					5	5	5	5	13	●	●	●			

Nominal Ø mm	110 16 2902 NC reamer	Tolerance	L_A mm	L_{tot} mm	Number of cutting edges Z	mm	< 750 N f mm/rev.	< 750 N Drill Ø mm
1,01	XXX	0 / 0.004	16	35	3	1	0.1	0.9
1,02	XXX	0 / 0.004	16	35	3	1	0.1	0.9
1,03	XXX	0 / 0.004	16	35	3	1	0.1	0.9
1,51	XXX	0 / 0.004	22	40	3	2	0.1	1.4
1,52	XXX	0 / 0.004	22	40	3	2	0.1	1.4
1,53	XXX	0 / 0.004	22	40	3	2	0.1	1.4
1,65	XXX	0 / 0.004	22	40	3	2	0.1	1.5
1,68	XXX	0 / 0.004	22	40	3	2	0.1	1.6
1,97	XXX	0 / 0.004	26	49	4	2	0.1	1.9
1,98	XXX	0 / 0.004	26	49	4	2	0.1	1.9
1,99	XXX	0 / 0.004	26	49	4	2	0.1	1.9
2,01	XXX	0 / 0.004	26	49	4	2	0.1	1.9
2,02	XXX	0 / 0.004	26	49	4	2	0.1	1.9
2,03	XXX	0 / 0.004	26	49	4	2	0.1	1.9
2,35	XXX	0 / 0.004	27	57	4	3	0.1	2.2
2,47	XXX	0 / 0.004	27	57	4	3	0.1	2.4
2,48	XXX	0 / 0.004	27	57	4	3	0.1	2.4
2,49	XXX	0 / 0.004	27	57	4	3	0.1	2.4
2,51	XXX	0 / 0.004	27	57	4	3	0.1	2.4
2,52	XXX	0 / 0.004	27	57	4	3	0.1	2.4

Nominal Ø mm	110 16 2902 NC reamer	Tolerance	L_A mm	L_{tot} mm	Number of cutting edges Z	mm	< 750 N f mm/rev.	< 750 N Drill Ø mm
2,53	XXX	0 / 0.004	27	57	4	3	0.1	2.4
2,55	XXX	0 / 0.004	27	57	4	3	0.1	2.4
2,62	XXX	0 / 0.004	27	57	4	3	0.1	2.5
2,83	XXX	0 / 0.004	33	61	6	3	0.1	2.7
2,97	XXX	0 / 0.004	33	61	6	3	0.1	2.9
2,98	XXX	0 / 0.004	33	61	6	3	0.1	2.9
2,99	XXX	0 / 0.004	33	61	6	3	0.1	2.9
3,00...3,30	XXX	0 / 0.004	37	65	6	4	0.1	–
3,76...4,20	XXX	0 / 0.004	45	75	6	4	0.1	–
4,21...4,75	XXX	0 / 0.004	50	80	6	5	0.1	–
4,76...5,30	XXX	0 / 0.004	56	86	6	5	0.1	–
5,31...5,50	XXX	0 / 0.004	55	93	6	6	0.1	–
5,51...5,50	XXX	0 / 0,005	55	93	6	6	0.1	–
6,01...6,70	XXX	0 / 0,005	63	101	6	6	0.1	–
6,71...7,50	XXX	0 / 0,005	71	109	6	8	0.1	–
7,51...8,50	XXX	0 / 0,005	79	117	6	8	0.12	–
8,51...9,50	XXX	0 / 0,005	83	125	6	10	0.13	–
9,51...10,60	XXX	0 / 0,005	91	133	6	10	0.14	–
10,61...11,80	XXX	0 / 0,005	100	142	6	10	0.15	–
11,81...12,05	XXX	0 / 0,005	109	151	6	10	0.15	–

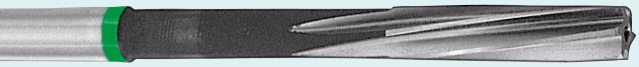
The quick way to suitable reamers

Article number	Tolerance	orderable nominal Ø	Application	Advantage
16 2900	H7	whole number and 1/10 sizes	For H7 fit tolerances.	Optimally matched to H7 fit tolerances, guaranteed to achieve a long tool life and maintain high accuracy.
16 2902	0 / + 0.004 or 0/ + 0.005	1/100 sizes	For a large number of fit sizes, even outside H7. For a selection of suitable diameters see the table of fits below.	Attractively-priced reamers and quick availability.
16 2951	Configurable (freely selectable)	Configurable (freely selectable)	For any combination of diameter and fit.	The reamers are ground to specification. They are optimally matched to the desired fit tolerance. This results in longer tool life than for 1/100 reamers.

Example for fit 11F7:
Reamers 16 2951 (size 11F7) that are ground for a specific fit lie in the upper part of the range and thus have a larger play for wear before they reach the wear limit.

In comparison to these the new reamer 16 2902 (size 11.02) has a somewhat smaller lower play.

Advantage: Attractive price and short lead times



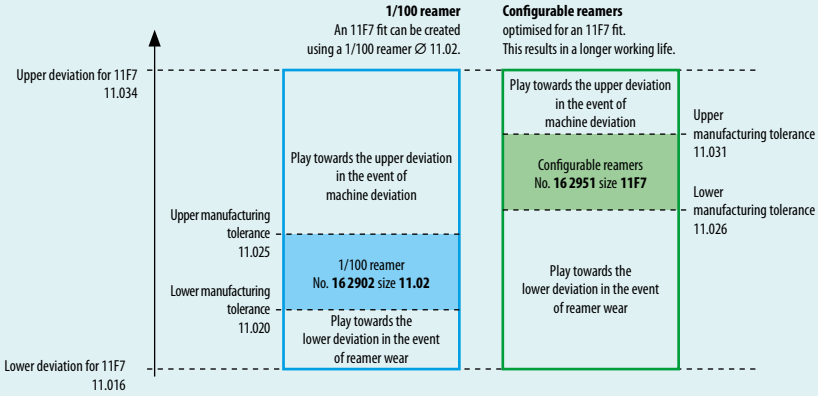


Table of fits for 1/100 machine reamers 16 2902

Fit	Hole diameter Ø																								
	1	1,5	2	2,5	3	3,5	3,7	4	4,5	5	5,5	6	6,5	7	7,5	7,8	8	8,5	9	9,5	10	10,2	10,5	11	11,5	12
D7	1.02	1.52	2.02	2.52	3.02	3.53	3.73	4.03	4.53	5.03	5.53	6.03	6.55	7.05	7.55	7.85	8.05	8.55	9.05	9.55	10.05	10.26	10.56	11.06	11.56	12.06
D8	1.03	1.53	2.03	2.53	3.03	3.54	3.74	4.04	4.54	5.04	5.54	6.04	6.55	7.05	7.55	7.85	8.05	8.55	9.05	9.55	10.05	10.27	10.57	11.07	11.57	12.07
D9	1.04	1.54	2.04	2.54	3.04	3.55	3.75	4.05	4.55	5.05	5.55	6.05	6.57	7.07	7.57	7.87	8.07	8.57	9.07	9.57	10.07	10.28	10.58	11.08	11.58	12.08
D10	1.05	1.55	2.05	2.55	3.05	3.57	3.77	4.07	4.57	5.07	5.57	6.07	6.58	7.08	7.58	7.88	8.08	8.58	9.08	9.58	10.08	10.30	10.60	11.10	11.60	12.10
D11	1.07	1.57	2.07	2.57	3.07	3.59	3.79	4.09	4.59	5.09	5.59	6.09	6.61	7.11	7.61	7.91	8.11	8.61	9.11	9.61	10.11	10.34	10.64	11.14	11.64	12.14
E7	1.02	1.52	2.02	2.52	3.02	3.52	3.72	4.02	4.52	5.02	5.52	6.02	6.53	7.03	7.53	7.83	8.03	8.53	9.03	9.53	10.03	10.24	10.54	11.04	11.54	12.04
E8	1.02	1.52	2.02	2.52	3.02	3.53	3.73	4.03	4.53	5.03	5.53	6.03	6.54	7.04	7.54	7.84	8.04	8.54	9.04	9.54	10.04	10.25	10.55	11.05	11.55	12.05
E9	1.03	1.53	2.03	2.53	3.03	3.54	3.74	4.04	4.54	5.04	5.54	6.04	6.55	7.05	7.55	7.85	8.05	8.55	9.05	9.55	10.05	10.26	10.56	11.06	11.56	12.06
E10	1.04	1.54	2.04	2.54	3.04	3.56	3.76	4.06	4.56	5.06	5.56	6.06	6.57	7.07	7.57	7.87	8.07	8.57	9.07	9.57	10.07	10.29	10.59	11.09	11.59	12.09
F6	-	-	-	-	-	3.51	3.71	4.01	4.51	5.01	5.51	6.01	-	-	-	-	-	-	-	-	-	10.22	10.52	11.02	11.52	12.02
F7	1.01	1.51	2.01	2.51	3.01	3.51	3.71	4.01	4.51	5.01	5.51	6.01	6.52	7.02	7.52	7.82	8.02	8.52	9.02	9.52	10.02	10.22	10.52	**11.02**	11.52	12.02
F8	1.01	1.51	2.01	2.51	3.01	3.52	3.72	4.02	4.52	5.02	5.52	6.02	6.53	7.03	7.53	7.83	8.03	8.53	9.03	9.53	10.03	10.23	10.53	11.03	11.53	12.03
F9	1.02	1.52	2.02	2.52	3.02	3.53	3.73	4.03	4.53	5.03	5.53	6.03	6.54	7.04	7.54	7.84	8.04	8.54	9.04	9.54	10.04	10.25	10.55	11.05	11.55	12.05
G7	-	-	-	-	-	3.51	3.71	4.01	4.51	5.01	5.51	6.01	6.51	7.01	7.51	7.81	8.01	8.51	9.01	9.51	10.01	10.21	10.51	11.01	11.51	12.01
H5	1.00	1.50	2.00	2.50	3.00	3.50	3.70	4.00	4.50	5.00	5.50	6.00	6.50	7.00	7.50	7.80	8.00	8.50	9.00	9.50	10.00	10.20	10.50	11.00	11.50	12.00
H6	1.00	1.50	2.00	2.50	3.00	3.50	3.70	4.00	4.50	5.00	5.50	6.00	6.50	7.00	7.50	7.80	8.00	8.50	9.00	9.50	10.00	10.20	10.50	11.00	11.50	12.00
H7	1.00	1.50	2.00	2.50	3.00	3.50	3.70	4.00	4.50	5.00	5.50	6.00	6.51	7.01	7.51	7.81	8.01	8.51	9.01	9.51	10.01	10.21	10.51	11.01	11.51	12.01
H8	1.01	1.51	2.01	2.51	3.01	3.51	3.71	4.01	4.51	5.01	5.51	6.01	6.51	7.01	7.51	7.81	8.01	8.51	9.01	9.51	10.01	10.22	10.52	11.02	11.52	12.02
H9	1.02	1.52	2.02	2.52	3.02	3.52	3.72	4.02	4.52	5.02	5.52	6.02	6.53	7.03	7.53	7.83	8.03	8.53	9.03	9.53	10.03	10.23	10.53	11.03	11.53	12.03
H10	1.03	1.53	2.03	2.53	3.03	3.54	3.74	4.04	4.54	5.04	5.54	6.04	6.54	7.04	7.54	7.84	8.04	8.54	9.04	9.54	10.04	10.25	10.55	11.05	11.55	12.05
H11	1.05	1.55	2.05	2.55	3.05	3.56	3.76	4.06	4.56	5.06	5.56	6.06	6.57	7.07	7.57	7.87	8.07	8.57	9.07	9.57	10.07	10.29	10.59	11.09	11.59	12.09
H12	1.08	1.58	2.08	2.58	3.08	3.60	3.80	4.10	4.60	5.10	5.60	6.10	6.62	7.12	7.62	7.92	8.12	8.62	9.12	9.62	10.12	10.35	10.65	11.15	11.65	12.15
J6	-	-	-	-	-	3.50	3.70	4.00	4.50	5.00	5.50	6.00	6.50	7.00	7.50	7.80	8.00	8.50	9.00	9.50	10.00	10.20	10.50	11.00	11.50	12.00
J7	1.00	1.50	2.00	2.50	3.00	3.50	3.70	4.00	4.50	5.00	5.50	6.00	6.50	7.00	7.50	7.80	8.00	8.50	9.00	9.50	10.00	10.20	10.50	11.00	11.50	12.00
JS6	-	-	-	-	-	3.50	3.70	4.00	4.50	5.00	-	-	-	-	-	-	-	-	-	-	-	10.20	10.50	11.00	11.50	12.00
JS7	1.00	1.50	2.00	2.50	3.00	3.50	3.70	4.00	4.50	5.00	5.50	6.00	6.50	7.00	7.50	7.80	8.00	8.50	9.00	9.50	10.00	10.20	10.50	11.00	11.50	12.00
K7	0.99	1.49	1.99	2.49	2.99	-	-	-	-	-	-	-	6.50	7.00	7.50	7.80	8.00	8.50	9.00	9.50	10.00	10.20	10.50	11.00	11.50	12.00
M6	-	-	-	-	-	-	-	-	-	-	-	-	6.49	6.99	7.49	7.79	7.99	8.49	8.99	9.49	9.99	10.19	10.49	10.99	11.49	11.99
M7	0.99	1.49	1.99	2.49	2.99	3.49	3.69	3.99	4.49	4.99	5.49	5.99	6.49	6.99	7.49	7.79	7.99	8.49	8.99	9.49	9.99	10.19	10.49	10.99	11.49	11.99
N6	0.99	1.49	1.99	2.49	2.99	3.49	3.69	3.99	4.49	4.99	5.49	5.99	-	-	-	-	-	-	-	-	-	10.18	10.48	10.98	11.48	11.98
N7	0.99	1.49	1.99	2.49	2.99	3.49	3.69	3.99	4.49	4.99	5.49	5.99	6.49	6.99	7.49	7.79	7.99	8.49	8.99	9.49	9.99	10.19	10.49	10.99	11.49	11.99
P6	0.99	1.49	1.99	2.49	2.99	-	-	-	-	-	-	-	6.48	6.98	7.48	7.78	7.98	8.48	8.98	9.48	9.98	10.18	10.48	10.98	11.48	11.98
P7	0.99	1.49	1.99	2.49	2.99	3.48	3.68	3.98	4.48	4.98	5.48	5.98	6.48	6.98	7.48	7.78	7.98	8.48	8.98	9.48	9.98	10.18	10.48	10.98	11.48	11.98
P8	0.99	1.49	1.99	2.49	2.99	3.48	3.68	3.98	4.48	4.98	5.48	5.98	6.48	6.98	7.48	7.78	7.98	8.48	8.98	9.48	9.98	10.17	10.47	10.97	11.47	11.97
P9	0.99	1.49	1.99	2.49	2.99	3.48	3.68	3.98	4.48	4.98	5.48	5.98	6.47	6.97	7.47	7.77	7.97	8.47	8.97	9.47	9.97	10.17	10.47	10.97	11.47	11.97
R6	-	-	-	-	-	3.48	3.68	3.98	4.48	4.98	5.48	5.98	-	-	-	-	-	-	-	-	-	10.17	10.47	10.97	11.47	11.97
R7	0.98	1.48	1.98	2.48	2.98	3.48	3.68	3.98	4.48	4.98	5.48	5.98	6.48	6.98	7.48	7.78	7.98	8.48	8.98	9.48	9.98	10.17	10.47	10.97	11.47	11.97
S7	0.98	1.48	1.98	2.48	2.98	3.48	3.68	3.98	4.48	4.98	5.48	5.98	6.47	6.97	7.47	7.77	7.97	8.47	8.97	9.47	9.97	10.17	10.47	10.97	11.47	11.97
S8	0.98	1.48	1.98	2.48	2.98	3.47	3.67	3.97	4.47	4.97	5.47	5.97	6.47	6.97	7.47	7.77	7.97	8.47	8.97	9.47	9.97	10.16	10.46	10.96	11.46	11.96
U7	-	-	-	-	-	3.47	3.67	3.97	4.47	4.97	5.47	5.97	6.47	6.97	7.47	7.77	7.97	8.47	8.97	9.47	9.97	10.16	10.46	10.96	11.46	11.96
X7	0.97	1.47	1.97	2.47	2.97	3.47	3.67	3.97	4.47	4.97	5.47	5.97	6.46	6.96	7.46	7.76	7.96	8.46	8.96	9.46	9.96	10.16	10.46	10.96	11.46	11.96
X8	0.97	1.47	1.97	2.47	2.97	3.46	3.66	3.96	4.46	4.96	5.46	5.96	6.46	6.96	7.46	7.76	7.96	8.46	8.96	9.46	9.96	10.15	10.45	10.95	11.45	11.95
Z8	0.97	1.47	1.97	2.47	2.97	3.46	3.66	3.96	4.46	4.96	5.46	5.96	6.45	6.95	7.45	7.75	7.95	8.45	8.95	9.45	9.95	10.14	10.44	10.94	11.44	11.94

HSS E | Standard | h6 DIN 1835 A

NC machine reamers with whole-number shank ∅, non-standard sizes and fits

Reamers finish ground to fit your specifications.

Note: For **fit H7** see No. 162900 and 163000.
For reamers in 1/100 - sizes see No. 162902.

≤ 3.7 mm 16 2951

≥ 4 mm 16 2951

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	CuZn	Uni
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	M	M	S	K	N	
16 2951		13	11	11	**7**	**7**	**5**	4					**5**	5	5	5	13	●

Nominal ∅ mm	110 16 2951 NC reamer	∅ range mm	L_A mm	L_{tot} mm	Number of cutting edges Z	mm	< 750 N f mm/rev.
1	(XXX)	0.95 – 1.06	13	34	3	1	0.1
1,1	(XXX)	1.07 – 1.18	14	36	3	1	0.1
1,2	(XXX)	1.19 – 1.32	13	38	3	2	0.1
1,4	(XXX)	1.33 – 1.41	15	40	3	2	0.1
1,5	(XXX)	1.42 – 1.5	15	40	3	2	0.1
1,6	(XXX)	1.51 – 1.7	17	43	3	2	0.1
1,8	(XXX)	1.71 – 1.9	20	46	3	2	0.1
2	(XXX)	1.91 – 2.12	22	49	4	2	0.1
2,2	(XXX)	2.13 – 2.36	21	53	4	3	0.1
2,5	(XXX)	2.37 – 2.65	26	57	4	3	0.1
2,8	(XXX)	2.66 – 2.8	30	61	4	3	0.1
3	(XXX)	2.81 – 3	30	61	6	3	0.1
3,2	(XXX)	3.01 – 3.35	33	65	6	4	0.1
3,5	(XXX)	3.36 – 3.75	39	75	6	4	0.1
4	(XXX)	3.76 – 4.05	46	75	6	4	0.1
4,3	(XXX)	4.06 – 4.25	46	75	6	4	0.1
4,5	(XXX)	4.26 – 4.75	51	80	6	5	0.1
5	(XXX)	4.76 – 5.05	57	86	6	5	0.1
5,3	(XXX)	5.06 – 5.3	57	86	6	5	0.1
5,5	(XXX)	5.31 – 5.6	56	93	6	6	0.1
6	(XXX)	5.61 – 6	56	93	6	6	0.1
6,5	(XXX)	6.01 – 6.7	64	101	6	6	0.1
7	(XXX)	6.71 – 7.05	72	109	6	8	0.1
7,5	(XXX)	7.06 – 7.5	72	109	6	8	0.1
8	(XXX)	7.51 – 8.05	80	117	6	8	0.13

Nominal ∅ mm	110 16 2951 NC reamer	∅ range mm	L_A mm	L_{tot} mm	Number of cutting edges Z	mm	< 750 N f mm/rev.
8,5	(XXX)	8.06 – 8.5	80	117	6	8	0.13
9	(XXX)	8.51 – 9.05	84	125	6	10	0.13
9,5	(XXX)	9.06 – 9.5	84	125	6	10	0.13
10	(XXX)	9.51 – 10.05	92	133	6	10	0.15
10,5	(XXX)	10.06 – 10.6	92	133	6	10	0.15
11	(XXX)	10.61 – 11.05	101	142	6	10	0.15
11,5	(XXX)	11.06 – 11.8	101	142	6	10	0.15
12	(XXX)	11.81 – 12.05	110	151	6	10	0.15
12,5	(XXX)	12.06 – 12.6	110	151	6	10	0.15
13	(XXX)	12.61 – 13.2	110	151	6	10	0.15
13,5	(XXX)	13.21 – 13.55	113	160	8	14	0.15
14	(XXX)	13.56 – 14	113	160	8	14	0.15
14,5	(XXX)	14.01 – 14.5	115	162	8	14	0.15
15	(XXX)	14.51 – 15	115	162	8	14	0.2
15,5	(XXX)	15.01 – 15.5	123	170	8	14	0.2
16	(XXX)	15.51 – 16	123	170	8	14	0.2
16,5	(XXX)	16.01 – 16.5	129	175	8	14	0.2
17	(XXX)	16.51 – 17	129	175	8	14	0.2
17,5	(XXX)	17.01 – 17.5	136	182	8	14	0.2
18	(XXX)	17.51 – 18	136	182	8	14	0.2
18,5	(XXX)	18.01 – 18.5	140	189	8	16	0.2
19	(XXX)	18.51 – 19	140	189	8	16	0.2
19,5	(XXX)	19.01 – 19.5	146	195	8	16	0.2
20	(XXX)	19.51 – 20	146	195	8	16	0.25

H7 | HSS E | Standard | h6 DIN 1835 A

NC machine reamers, whole-number shank ∅

With long flutes and left-hand helix.
Reamers finish ground for fit H7.

Application: Especially for deeper holes.
Also suitable for blind holes.

16 2961

16 2971

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	CuZn	Uni
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	M	M	S	K	N	
16 2961/2971		13	11	11	**7**	**7**	**5**	4					**5**	5	5	5	13	●

Nominal ∅ mm	110 16 2961 NC reamer long H7	110 16 2971 NC reamer extra long H7	L_A 16 2961 mm	L_A 16 2971 mm	L_{tot} 16 2961 mm	L_{tot} 16 2971 mm	Number of cutting edges Z	mm	< 750 N f mm/rev.	< 750 N Drill ∅ mm
2	XXX	XXX	44	64	65	85	4	2	0.1	1.9
3	XXX	XXX	69	99	90	120	6	3	0.1	2.9
4	XXX	XXX	79	134	105	160	6	4	0.1	3.9
5	XXX	XXX	89	174	115	200	6	5	0.1	4.9
6	XXX	XXX	99	219	130	250	6	6	0.1	5.8
8	XXX	XXX	129	219	160	250	6	8	0.13	7.8
10	XXX	XXX	148	219	175	250	6	10	0.15	9.8
12	XXX	XXX	159	249	210	300	6	12	0.15	11.8

H7 | HSS E | DIN 212 B | h9

Garant

Machine reamers plain shank

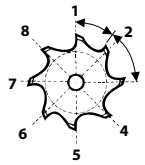
163000 ≤ 3.7 mm

163000 ≥ 3.9 mm

With long flutes and left-hand helix.
From size 1.8 even number of teeth and uneven spacing.
Up to size 3.7 both ends with external centres;
from size 3.9 both ends with internal centres.
Reamers finish ground for fit H7.

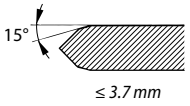
Application: For reaming through holes. Also suitable for blind holes (from 3.9 mm ∅) due to short chamfer lead.

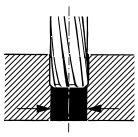
Note:
- Straight flute machine chucking reamers – available ex-stock.
- **For reamers with other diameters and fits see No. 162951.**



Even number of teeth with irregular spacing – pairs of teeth are exactly opposite each other; e. g. teeth 1 and 5.

Chamfer lead forms:





Correct undersize for pre-drilled holes can be found in the machining handbook.

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 900 N	> 900 N	> 850 N	GG(G)	CuZn	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	M	M	S	K	N						
163000		13	11	11	**7**	**7**	**5**	4					**5**	5	5	5	13	●	●	●			

Nominal ∅ mm	110 163000 Machine reamer H7	L_A mm	L_{tot} mm	mm	< 750 N f mm/rev.
1,5	XXX	16	40	1.5	0.1
1,6	XXX	18	43	1.6	0.1
1,7	XXX	18	43	1.6	0.1
1,8	XXX	20	46	1.8	0.1
1,9	XXX	20	46	1.8	0.1
2	XXX	22	49	2	0.1
2,1	XXX	22	49	2	0.1
2,2	XXX	24	53	2.2	0.1
2,3	XXX	24	53	2.2	0.1
2,4	(XXX)	26	57	2.5	0.1
2,5	XXX	26	57	2.5	0.1
2,6	XXX	26	57	2.5	0.1
2,7	XXX	30	61	2.8	0.1
2,8	XXX	30	61	2.8	0.1
2,9	(XXX)	29	61	3	0.1
3	XXX	29	61	3	0.1
3,1	XXX	33	65	3.2	0.1
3,2	XXX	33	65	3.2	0.1
3,3	(XXX)	33	65	3.2	0.1
3,4	XXX	38	70	3.5	0.1
3,5	XXX	38	70	3.5	0.1
3,6	(XXX)	38	70	3.5	0.1

Nominal ∅ mm	110 163000 Machine reamer H7	L_A mm	L_{tot} mm	mm	< 750 N f mm/rev.
3,7	XXX	38	70	3.5	0.1
3,9	(XXX)	46	75	4	0.1
4	XXX	46	75	4	0.1
4,1	XXX	46	75	4	0.1
4,2	XXX	46	75	4	0.1
4,3	(XXX)	51	80	4.5	0.1
4,4	(XXX)	51	80	4.5	0.1
4,5	XXX	51	80	4.5	0.1
4,6	(XXX)	51	80	4.5	0.1
4,7	(XXX)	51	80	4.5	0.1
5	XXX	57	86	5	0.1
5,1	XXX	57	86	5	0.1
5,2	XXX	57	86	5	0.1
5,5	XXX	56	93	5.6	0.1
5,6	(XXX)	56	93	5.6	0.1
5,7	(XXX)	56	93	5.6	0.1
5,8	(XXX)	56	93	5.6	0.1
6	XXX	56	93	5.6	0.1
6,1	XXX	64	101	6.3	0.1
6,2	XXX	64	101	6.3	0.1
6,4	(XXX)	64	101	6.3	0.1
6,5	XXX	64	101	6.3	0.1

Nominal ∅ mm	110 163000 Machine reamer H7	L_A mm	L_{tot} mm	mm	< 750 N f mm/rev.
6,6	(XXX)	64	101	6.3	0.1
7	XXX	72	109	7.1	0.1
7,3	(XXX)	72	109	7.1	0.1
7,5	XXX	72	109	7.1	0.1
8	XXX	80	117	8	0.13
8,1	XXX	80	117	8	0.13
8,2	XXX	80	117	8	0.13
8,5	XXX	80	117	8	0.13
9	XXX	84	125	9	0.13
9,5	XXX	84	125	9	0.13
10	XXX	92	133	10	0.15
11	XXX	101	142	10	0.15
12	XXX	110	151	10	0.15
13	XXX	110	151	10	0.15
14	XXX	114	160	12.5	0.15
15	XXX	116	162	12.5	0.2
16	XXX	124	170	12.5	0.2
17	XXX	129	175	14	0.2
18	XXX	136	182	14	0.2
19	XXX	140	189	16	0.2
20	XXX	146	195	16	0.25

H7 | HSS E | DIN 212 B | h9

Garant

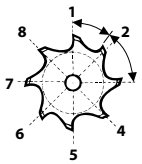
Machine reamers plain shank

163500

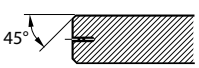
With long flutes and left-hand helix. Even number of teeth with irregular spacing.

Application: For reaming through holes, as the swarf is evacuated in the direction of cutting.

Even number of teeth with irregular spacing – pairs of teeth are exactly opposite each other; e. g. teeth 1 and 5.



Chamfer lead forms:



Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	< 900 N	> 900 N	> 850 N	GG(G)	CuZn					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	K	N					
163500				15	**10**	**9**	**7**	5								7	7	18	●	●			

Nominal ∅ mm	110 163500 Machine reamer H7 TiN	L_A mm	L_{tot} mm	mm	< 750 N f mm/rev.	< 750 N Drill ∅ mm
4	XXX	44	75	4	0.15	3.9
5	XXX	54	86	5	0.15	4.9
6	XXX	53	93	5.6	0.2	5.9
7	XXX	69	109	7.1	0.2	6.8
8	XXX	77	117	8	0.2	7.8
9	(XXX)	81	125	9	0.2	8.8

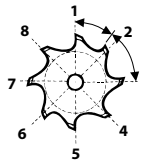
Nominal ∅ mm	110 163500 Machine reamer H7 TiN	L_A mm	L_{tot} mm	mm	< 750 N f mm/rev.	< 750 N Drill ∅ mm
10	XXX	89	133	10	0.23	9.8
11	(XXX)	98	142	10	0.23	10.8
12	XXX	106	151	10	0.23	11.8
14	XXX	110	160	12.5	0.23	13.8
16	XXX	120	170	12.5	0.3	15.8
20	(XXX)	142	195	16	0.38	19.8

HSS E | DIN 208 B | 7–8° | MT1-4

HOLEX Machine reamers with Morse taper shank

Even number of teeth with irregular spacing. The hole is accurately round and free of chatter marks. The cylindrical ground land on the plain cutting section smooths the hole and guides the reamer. With Morse taper shank.

Application: For reaming through holes, as the chips are evacuated in the cutting direction. Also suitable for blind holes due to the short chamfer lead.



Even number of teeth with irregular spacing; two teeth are exactly opposite each other, e.g. 1 and 5.

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	Cu					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	K	N					
16 4000/4180		13	11	11	**7**	**7**	**5**	4						**5**	5	5	5	13	●	●			

Reamers for fit H7

H7

Reamers finish ground for fit H7.

16 4000

Nominal ∅ mm	120 16 4000 Machine reamer H7	L_A mm	L_{tot} mm	MT	< 750 N f mm/rev.	< 750 N Drill ∅ mm
5	XXX	63	133	1	0.1	4.9
6	XXX	68	138	1	0.1	5.8
7	XXX	81	150	1	0.1	6.8
8	XXX	88	156	1	0.13	7.8
9	XXX	94	162	1	0.13	8.8
10	XXX	100	168	1	0.15	9.8
11	XXX	108	175	1	0.15	10.8
12	XXX	115	182	1	0.15	11.8
13	XXX	115	182	1	0.15	12.8
14	XXX	122	189	1	0.15	13.8
15	XXX	121	204	2	0.2	14.8
16	XXX	127	210	2	0.2	15.8
17	XXX	132	214	2	0.2	16.8
18	XXX	137	219	2	0.2	17.8
19	XXX	142	223	2	0.2	18.8
20	XXX	147	228	2	0.25	19.8
22	XXX	156	237	2	0.25	21.7

Nominal ∅ mm	120 16 4000 Machine reamer H7	L_A mm	L_{tot} mm	MT	< 750 N f mm/rev.	< 750 N Drill ∅ mm
23	XXX	160	241	2	0.25	22.7
24	XXX	167	268	3	0.25	23.7
25	XXX	174	268	3	0.25	24.7
26	XXX	172	273	3	0.25	25.7
28	XXX	177	277	3	0.25	27.7
30	XXX	181	281	3	0.3	29.7
32	XXX	190	317	4	0.3	31.6
34	XXX	194	321	4	0.3	33.6
35	XXX	195	321	4	0.3	34.6
36	(XXX)	200	325	4	0.3	35.6
38	XXX	204	329	4	0.3	37.6
40	XXX	204	329	4	0.35	39.5
42	XXX	211	333	4	0.35	41.5
44	(XXX)	215	336	4	0.35	43.5
45	XXX	215	336	4	0.35	44.5
50	XXX	224	344	4	0.4	49.5

Reamers similar to No. 164000, non-standard sizes and fits

Reamers finish ground to fit your specifications.

Note: For **H7 fits** see No. 164000.

16 4180

Nominal ∅ mm	120 16 4180 Machine reamer configurable	∅ range mm	L_A mm	L_{tot} mm	MT	< 750 N f mm/rev.
3	(XXX)	2.81 – 3.35	42	114.5	1	0.08
3,5	(XXX)	3.36 – 3.75	42	114.8	1	0.08
4	(XXX)	3.76 – 4.05	54	124	1	0.1
4,5	(XXX)	4.06 – 4.75	63	133	1	0.1
5	(XXX)	4.76 – 5.3	63	133	1	0.1
5,5	(XXX)	5.31 – 5.6	68	138	1	0.1
6	(XXX)	5.61 – 6	72	138	1	0.1
6,5	(XXX)	6.01 – 6.7	81	150	1	0.1
7	(XXX)	6.71 – 7.05	81	150	1	0.1
7,5	(XXX)	7.06 – 7.5	88	156	1	0.1

Nominal ∅ mm	120 16 4180 Machine reamer configurable	∅ range mm	L_A mm	L_{tot} mm	MT	< 750 N f mm/rev.
8	(XXX)	7.51 – 8.05	88	156	1	0.13
8,5	(XXX)	8.06 – 8.5	94	162	1	0.13
9	(XXX)	8.51 – 9.05	94	162	1	0.13
9,5	(XXX)	9.06 – 9.5	100	168	1	0.13
10	(XXX)	9.51 – 10.05	100	168	1	0.15
10,5	(XXX)	10.06 – 10.6	108	175	1	0.15
11	(XXX)	10.61 – 11.05	108	175	1	0.15
11,5	(XXX)	11.06 – 11.8	115	182	1	0.15
12	(XXX)	11.81 – 12.05	115	182	1	0.15
12,5	(XXX)	12.06 – 12.6	115	182	1	0.15

Nominal ∅ mm	120 16 4180 Machine reamer configurable	∅ range mm	L_A mm	L_{tot} mm	MT	< 750 N f mm/rev.
13	(XXX)	12.61 – 13.2	115	182	1	0.15
13,5	(XXX)	13.21 – 13.55	122	189	1	0.15
14	(XXX)	13.56 – 14	122	189	1	0.15
14,5	(XXX)	14.01 – 14.5	121	204	2	0.15
15	(XXX)	14.51 – 15.05	121	204	2	0.2
15,5	(XXX)	15.06 – 15.5	127	210	2	0.2
16	(XXX)	15.51 – 16	127	210	2	0.2
16,5	(XXX)	16.01 – 16.5	132	214	2	0.2
17	(XXX)	16.51 – 17	132	214	2	0.2
17,5	(XXX)	17.01 – 17.5	137	219	2	0.2
18	(XXX)	17.51 – 18	137	219	2	0.2
18,5	(XXX)	18.01 – 18.5	142	223	2	0.2
19	(XXX)	18.51 – 19	142	223	2	0.2
19,5	(XXX)	19.01 – 19.5	147	228	2	0.2
20	(XXX)	19.51 – 20	147	228	2	0.25
21	(XXX)	20.01 – 21.2	151	232	2	0.25
22	(XXX)	21.21 – 22.4	156	237	2	0.25
23	(XXX)	22.41 – 23.05	160	241	2	0.25
24	(XXX)	23.06 – 24.05	167	268	3	0.25
25	(XXX)	24.06 – 25	167	268	3	0.25
26	(XXX)	25.01 – 26.05	172	273	3	0.25
27	(XXX)	26.06 – 27.05	177	277	3	0.25
28	(XXX)	27.06 – 28	177	277	3	0.25

Nominal ∅ mm	120 16 4180 Machine reamer configurable	∅ range mm	L_A mm	L_{tot} mm	MT	< 750 N f mm/rev.
29	(XXX)	28.01 – 29.05	181	281	3	0.25
30	(XXX)	29.06 – 30	181	281	3	0.3
31	(XXX)	30.01 – 31.05	185	285	3	0.3
32	(XXX)	31.06 – 32.05	190	317	4	0.3
33	(XXX)	32.06 – 33.05	190	317	4	0.3
34	(XXX)	33.06 – 34.5	194	321	4	0.3
35	(XXX)	34.06 – 35.05	195	321	4	0.3
36	(XXX)	35.06 – 36.05	200	325	4	0.3
37	(XXX)	36.06 – 37.05	200	325	4	0.3
38	(XXX)	37.06 – 38.05	204	329	4	0.3
39	(XXX)	38.06 – 39.05	204	329	4	0.3
40	(XXX)	39.06 – 40	204	329	4	0.35
41	(XXX)	40.01 – 41.05	211	333	4	0.35
42	(XXX)	41.06 – 42.05	211	333	4	0.35
43	(XXX)	42.51 – 43.05	215	336	4	0.35
44	(XXX)	43.06 – 44.05	215	336	4	0.35
45	(XXX)	44.06 – 45	215	336	4	0.35
46	(XXX)	45.01 – 46.05	219	340	4	0.35
47	(XXX)	46.06 – 47.05	219	340	4	0.35
48	(XXX)	47.06 – 48.05	224	344	4	0.35
49	(XXX)	48.06 – 49.05	224	344	4	0.35
50	(XXX)	49.06 – 50	224	344	4	0.4

H7 | Carbide K10 | DIN 8093 | h9

Garant Carbide machine reamers

Long flutes, left-hand helix.
Extremely irregular spacing (EU) from size 2.
This ensures that the reamed bore is absolutely round and free from chatter marks.
Up to size 6 with centring point.

Tool material: Sizes 1 – 13 **solid carbide.**
Sizes 14 – 16 with **carbide inserts**, supported by hard nitrided steel guidel chamfers.

Application: On stable, low vibration machines. Longer tool life and better dimensional accuracy than HSS reamers.

16 4500

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	CuZn	Graphite GRP CRP					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	N	N					
16 4500		20	20	13	**13**	**10**	**8**	**6**						10			**20**		●	●			

Nominal ∅ mm	110 16 4500 Carbide machine reamer H7	L_A mm	L_{tot} mm	Number of cutting edges Z	mm	< 1100 N f mm/rev.	< 1100 N Drill ∅ mm
1	XXX	14	34	3	1	0.12	0.9
1,2	XXX	16	38	3	1.2	0.12	1.1
1,5	XXX	17	40	3	1.5	0.12	1.4
2	XXX	23	49	4	2	0.12	1.9
2,5	XXX	27	57	4	2.5	0.12	2.4
3	XXX	29	61	6	3	0.12	2.9
3,5	XXX	32	70	6	3.5	0.12	3.4
4	XXX	43	75	6	4	0.12	3.9
4,5	(XXX)	45	80	6	4.5	0.12	4.4
5	XXX	52	86	6	5	0.12	4.9
5,5	(XXX)	55	93	6	5.6	0.12	5.4
6	XXX	55	93	6	5.6	0.12	5.9
6,5	(XXX)	62	101	6	6.3	0.12	6.4
7	XXX	68	109	6	7.1	0.12	6.9
8	XXX	74	117	6	8	0.15	7.9
9	XXX	80	125	6	9	0.15	8.8
9,5	(XXX)	80	125	6	9	0.15	9.3
10	XXX	86	133	6	10	0.15	9.8
11	(XXX)	95	142	6	10	0.15	10.8
12	XXX	102	151	6	10	0.15	11.8
13	(XXX)	104	151	6	10	0.15	12.8
14	XXX	109	160	6	12.5	0.15	13.8
15	XXX	111	162	6	12.5	0.18	14.8
16	XXX	119	170	6	12.5	0.18	15.8

Solid carbide | Standard | h6 DIN 6535 HA

H7 | 0 +0.004

Ø ≤ 0,9

Universal solid carbide NC machine reamers

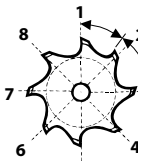
Version suitable for NC similar to DIN 8093 **with straight shank Ø** for **standard chucking** especially in **hydraulic chucks** or **high precision collet chucks.** This gives **very high concentricity** and **process reliability** when manufacturing H7 fits. **No need to procure special collets when using GARANT NC reamers.** With long flutes and left-hand helix.

Application: For reaming through holes, as the chips are evacuated in the cutting direction. Lead taper is suitable also for blind holes.

Note: For reamers like No. 164340 and 164341 but with other diameters and fits see No. 164344 and 164345.

16 4340

16 4341



Even number of teeth with irregular spacing – pairs of teeth are exactly opposite each other; e. g. tooth 1 and 5.

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	CuZn	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	M	M	S	K	N						
16 4340		30	25	13	13	10	8	6					10	8	8	8	20	●		●			
16 4341		30	25	35	25	20	15	10					15	12	10	10	25	●		●			

Nominal Ø	11P 16 4340	11P 16 4341	Tolerance	L_A	L_{tot}	Number of cutting edges Z		< 1100 N f	< 1100 N Drill Ø
	Solid carbide NC machine reamer								
		TiAlN							
mm				mm	mm		mm	mm/rev.	mm
0,60	XXX	–	0 / 0.004	7.5	45	4	3	0.08	0.5
0,70	XXX	–	0 / 0.004	7.5	45	4	3	0.08	0.6
0,80	XXX	–	0 / 0.004	8	45	4	3	0.08	0.7
0,90	XXX	–	0 / 0.004	8	45	4	3	0.08	0.8
0,98	XXX	XXX	H7	16	50	3	4	0.08	0.9
0,99	XXX	XXX	H7	16	50	3	4	0.08	0.9
1	XXX	XXX	H7	16	50	3	4	0.08	0.9
1,01	XXX	XXX	H7	16	50	3	4	0.08	0.9
1,02	XXX	XXX	H7	16	50	3	4	0.08	0.9
1,03	XXX	XXX	H7	16	50	3	4	0.08	0.95
1,48	XXX	XXX	H7	16	50	3	4	0.08	1.4
1,49	XXX	XXX	H7	16	50	3	4	0.08	1.4
1,5	XXX	XXX	H7	16	50	3	4	0.08	1.4
1,51	XXX	XXX	H7	16	50	3	4	0.08	1.4
1,52	XXX	XXX	H7	16	50	3	4	0.08	1.4
1,6	XXX	XXX	H7	16	50	3	4	0.08	1.5
1,7	XXX	XXX	H7	16	50	3	4	0.08	1.6
1,8	XXX	XXX	H7	16	50	3	4	0.08	1.7
1,9	–	XXX	H7	16	50	3	4	0.08	1.8
1,98	XXX	XXX	H7	16	50	4	4	0.08	1.9
1,99	XXX	XXX	H7	16	50	4	4	0.08	1.9
2	XXX	XXX	H7	16	50	4	4	0.1	1.9
2,01	XXX	XXX	H7	16	50	4	4	0.1	1.9
2,02	XXX	XXX	H7	16	50	4	4	0.1	1.9
2,03	XXX	XXX	H7	16	50	4	4	0.1	1.95
2,4	–	XXX	H7	26	60	4	4	0.1	2.3
2,5	XXX	XXX	H7	26	60	4	4	0.1	2.3
2,6	XXX	XXX	H7	26	60	4	4	0.1	2.4
2,7	–	XXX	H7	30	64	4	4	0.1	2.5
2,8	–	XXX	H7	30	64	4	4	0.1	2.6
2,9	–	XXX	H7	30	64	4	4	0.1	2.7
2,97	XXX	XXX	H7	30	64	4	4	0.1	2.8
2,98	XXX	XXX	H7	30	64	4	4	0.1	2.8
2,99	XXX	XXX	H7	30	64	4	4	0.1	2.8
3	XXX	XXX	H7	30	64	4	4	0.12	2.8
3,01	XXX	XXX	H7	30	64	4	4	0.12	2.8
3,02	XXX	XXX	H7	30	64	4	4	0.12	2.8
3,03	XXX	XXX	H7	30	64	4	4	0.12	2.8
3,1	XXX	XXX	H7	34	68	4	4	0.12	2.9
3,2	XXX	XXX	H7	34	68	4	4	0.12	3
3,3	XXX	XXX	H7	34	68	4	4	0.12	3.1
3,4	–	XXX	H7	40	74	4	4	0.12	3.2
3,5	XXX	XXX	H7	40	74	4	4	0.12	3.3
3,6	XXX	XXX	H7	40	74	4	4	0.12	3.4
3,7	–	XXX	H7	40	74	4	4	0.12	3.5
3,8	–	XXX	H7	43	77	4	4	0.12	3.6
3,97	XXX	XXX	H7	43	77	4	4	0.12	3.8
3,98	XXX	XXX	H7	43	77	4	4	0.12	3.8
3,99	XXX	XXX	H7	43	77	4	4	0.12	3.8
4	XXX	XXX	H7	43	77	4	4	0.12	3.8

Nominal Ø	11P 16 4340	11P 16 4341	Tolerance			Number of cutting edges Z			
	Solid carbide NC machine reamer			L_A	L_{tot}			< 1100 N f	< 1100 N Drill Ø
mm		TiAlN		mm	mm		mm	mm/rev.	mm
4,01	XXX	XXX	H7	43	77	4	4	0.12	3.8
4,02	XXX	XXX	H7	43	77	4	4	0.12	3.8
4,03	XXX	XXX	H7	43	77	4	4	0.12	3.8
4,1	XXX	XXX	H7	40	82	6	6	0.12	3.9
4,2	XXX	XXX	H7	40	82	6	6	0.12	4
4,3	XXX	XXX	H7	40	82	6	6	0.12	4.1
4,4	XXX	XXX	H7	40	82	6	6	0.12	4.2
4,5	XXX	XXX	H7	40	82	6	6	0.12	4.3
4,6	–	XXX	H7	40	82	6	6	0.12	4.4
4,8	XXX	XXX	H7	51	93	6	6	0.12	4.6
4,9	XXX	XXX	H7	51	93	6	6	0.12	4.7
4,97	XXX	XXX	H7	51	93	6	6	0.12	4.8
4,98	XXX	XXX	H7	51	93	6	6	0.12	4.8
4,99	XXX	XXX	H7	51	93	6	6	0.12	4.8
5	XXX	XXX	H7	51	93	6	6	0.12	4.8
5,01	XXX	XXX	H7	51	93	6	6	0.12	4.8
5,02	XXX	XXX	H7	51	93	6	6	0.12	4.8
5,03	XXX	XXX	H7	51	93	6	6	0.12	4.8
5,1	XXX	XXX	H7	51	93	6	6	0.12	4.9
5,2	XXX	XXX	H7	51	93	6	6	0.12	5
5,3	XXX	XXX	H7	51	93	6	6	0.12	5.1
5,5	XXX	XXX	H7	51	93	6	6	0.12	5.3
5,6	–	XXX	H7	51	93	6	6	0.12	5.4
5,7	–	XXX	H7	51	93	6	6	0.12	5.5
5,8	XXX	XXX	H7	51	93	6	6	0.12	5.6
5,98	XXX	XXX	H7	51	93	6	6	0.12	5.8
5,99	XXX	XXX	H7	51	93	6	6	0.12	5.8
6	XXX	XXX	H7	51	93	6	6	0.14	5.8
6,01	XXX	XXX	H7	51	93	6	6	0.14	5.8
6,02	XXX	XXX	H7	51	93	6	6	0.14	5.8
6,03	XXX	XXX	H7	51	93	6	6	0.14	5.8
6,1	XXX	XXX	H7	59	101	6	8	0.14	5.9
6,2	XXX	XXX	H7	59	101	6	8	0.14	6
6,3	XXX	XXX	H7	59	101	6	8	0.14	6.1
6,4	XXX	XXX	H7	59	101	6	8	0.14	6.2
6,5	XXX	XXX	H7	59	101	6	8	0.14	6.3
6,6	XXX	XXX	H7	59	101	6	8	0.14	6.4
6,7	XXX	XXX	H7	59	101	6	8	0.14	6.5
6,9	XXX	XXX	H7	67	109	6	8	0.14	6.7
7	XXX	XXX	H7	67	109	6	8	0.14	6.8
7,2	XXX	XXX	H7	67	109	6	8	0.14	7
7,5	XXX	XXX	H7	67	109	6	8	0.14	7.3
7,6	XXX	XXX	H7	67	109	6	8	0.14	7.4
7,7	–	XXX	H7	75	117	6	8	0.14	7.5
7,97	XXX	XXX	H7	75	117	6	8	0.14	7.7
7,98	XXX	XXX	H7	75	117	6	8	0.14	7.7
7,99	XXX	XXX	H7	75	117	6	8	0.14	7.7
8	XXX	XXX	H7	75	117	6	8	0.15	7.7
8,01	XXX	XXX	H7	75	117	6	8	0.15	7.7
8,02	XXX	XXX	H7	75	117	6	8	0.15	7.7
8,03	XXX	XXX	H7	75	117	6	8	0.15	7.7
8,1	XXX	XXX	H7	71	117	6	10	0.15	7.8
8,2	XXX	XXX	H7	71	117	6	10	0.15	7.9
8,3	–	XXX	H7	71	117	6	10	0.15	8
8,5	XXX	XXX	H7	71	117	6	10	0.15	8.2
8,7	XXX	XXX	H7	79	125	6	10	0.15	8.4
9	XXX	XXX	H7	79	125	6	10	0.15	8.7
9,5	XXX	XXX	H7	79	125	6	10	0.15	9.2
9,6	XXX	XXX	H7	79	125	6	10	0.15	9.3
9,97	XXX	XXX	H7	87	133	6	10	0.15	9.7
9,98	XXX	XXX	H7	87	133	6	10	0.15	9.7
9,99	XXX	XXX	H7	87	133	6	10	0.15	9.7
10	XXX	XXX	H7	87	133	6	10	0.18	9.7
10,01	XXX	XXX	H7	87	133	6	10	0.18	9.7
10,02	XXX	XXX	H7	87	133	6	10	0.18	9.7
10,03	XXX	XXX	H7	87	133	6	10	0.18	9.7
11	XXX	XXX	H7	91	142	6	12	0.18	10.7
11,97	XXX	XXX	H7	99	150	6	12	0.18	11.7
11,98	XXX	XXX	H7	99	150	6	12	0.18	11.7
11,99	XXX	XXX	H7	99	150	6	12	0.18	11.7
12	XXX	XXX	H7	99	150	6	12	0.18	11.7
12,01	XXX	XXX	H7	99	150	6	12	0.18	11.7
12,02	XXX	XXX	H7	99	150	6	12	0.18	11.7
12,03	XXX	XXX	H7	99	150	6	12	0.18	11.7
13	XXX	XXX	H7	99	150	8	14	0.18	12.7
14	XXX	XXX	H7	110	162	8	14	0.18	13.7
15	XXX	XXX	H7	110	162	8	16	0.18	14.7
16	XXX	XXX	H7	115	170	8	16	0.2	15.7
17	XXX	XXX	H7	120	175	8	18	0.2	16.7
18	XXX	XXX	H7	126	182	8	18	0.2	17.6
19	XXX	XXX	H7	131	189	8	20	0.2	18.6
20	XXX	XXX	H7	136	195	8	20	0.2	19.6

Solid carbide | DIN 8093 | h6 DIN 6535 HA

Garant

Universal solid carbide machine reamers, non-standard sizes and fits

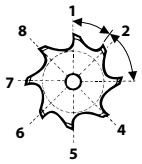
Version suitable for NC DIN 8093-2 **with straight shank** ∅ for **standard chucking** especially in **hydraulic chucks** or **high precision collet chucks.** This ensures **very high concentricity** and **process reliability**,
The use of GARANT-NC reamers eliminates the need to procure special collets. With long flutes and left-hand helix.
Reamers finish ground to match your specifications.

Application: For reaming through holes, as the chips are evacuated in the cutting direction. Lead taper is suitable also for blind holes.

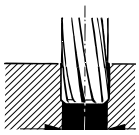
Note: For fit H7 see No. 164340 and 164341.
Dimensions are changed in accordance with changes to the standard DIN 8093-2.

164345

164344



Even number of teeth with irregular spacing – teeth are exactly opposite each other; e. g. teeth 1 and 5.



The correct undersize for pre-drilled holes can be found in the machining handbook.

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	CuZn	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	M	M	S	K	N						
164345		30	25	13	13	10	8	6					10	8	8	8	20	●		●			
164344		30	25	35	25	20	15	10					15	12	10	10	25	●		●			

Nominal ∅	10N 164345	10N 164344	∅ range	L_A	L_{tot}	Number of cutting edges Z		< 1100 N f
	Solid carbide NC machine reamer							
mm		TiAlN	mm	mm	mm		mm	mm/rev.
1	(XXX)	(XXX)	0.95 – 1.06	19	50	3	4	0.08
1,1	(XXX)	(XXX)	1.07 – 1.18	19	50	3	4	0.08
1,2	(XXX)	(XXX)	1.19 – 1.32	19	50	3	4	0.08
1,4	(XXX)	(XXX)	1.33 – 1.42	19	50	3	4	0.08
1,5	(XXX)	(XXX)	1.43 – 1.5	19	50	3	4	0.08
1,6	(XXX)	(XXX)	1.51 – 1.7	19	50	3	4	0.08
1,8	(XXX)	(XXX)	1.71 – 1.9	19	50	4	4	0.08
2	(XXX)	(XXX)	1.91 – 2.12	19	50	4	4	0.1
2,2	(XXX)	(XXX)	2.13 – 2.36	19	50	4	4	0.1
2,5	(XXX)	(XXX)	2.37 – 2.65	29	60	4	4	0.1
2,8	(XXX)	(XXX)	2.66 – 2.8	33	65	6	4	0.1
3	(XXX)	(XXX)	2.81 – 3	33	65	6	4	0.12
3,2	(XXX)	(XXX)	3.01 – 3.35	37	65	6	4	0.12
3,5	(XXX)	(XXX)	3.36 – 3.75	43	75	6	4	0.12
4	(XXX)	(XXX)	3.76 – 4.09	45	75	6	4	0.12
4,5	(XXX)	(XXX)	4.1 – 4.79	42	80	6	6	0.12
5	(XXX)	(XXX)	4.8 – 5.3	55	93	6	6	0.12
5,5	(XXX)	(XXX)	5.31 – 5.6	55	93	6	6	0.12
6	(XXX)	(XXX)	5.61 – 6.03	55	93	6	6	0.14
6,5	(XXX)	(XXX)	6.04 – 6.7	63	101	6	8	0.14
7	(XXX)	(XXX)	6.71 – 7.1	71	109	6	8	0.14
7,5	(XXX)	(XXX)	7.11 – 7.6	71	109	6	8	0.14
8	(XXX)	(XXX)	7.61 – 8.09	79	117	6	8	0.15
8,5	(XXX)	(XXX)	8.1 – 8.6	79	117	6	8	0.15
9	(XXX)	(XXX)	8.61 – 9.1	83	125	6	10	0.15
9,5	(XXX)	(XXX)	9.11 – 9.69	83	125	6	10	0.15
10	(XXX)	(XXX)	9.7 – 10.05	91	133	6	10	0.18
10,5	(XXX)	(XXX)	10.06 – 10.6	91	133	6	10	0.18
11	(XXX)	(XXX)	10.61 – 11.05	100	142	6	10	0.18
11,5	(XXX)	(XXX)	11.06 – 11.8	100	142	6	10	0.18
12	(XXX)	(XXX)	11.81 – 12.2	104	151	6	12	0.18
13	(XXX)	(XXX)	12.21 – 13.2	104	151	8	12	0.18
14	(XXX)	(XXX)	13.21 – 14	110	160	8	16	0.18
15	(XXX)	(XXX)	14.01 – 15.2	112	162	8	16	0.18
16	(XXX)	(XXX)	15.21 – 16.2	120	170	8	16	0.2
17	(XXX)	(XXX)	16.21 – 17.2	125	175	8	18	0.2
18	(XXX)	(XXX)	17.21 – 18.2	132	182	8	18	0.2
19	(XXX)	(XXX)	18.21 – 19.2	137	189	8	20	0.2
20	(XXX)	(XXX)	19.21 – 20.2	143	195	8	20	0.2

HSS | Standard | 25 bar | h6 DIN 6535 HA | HPC

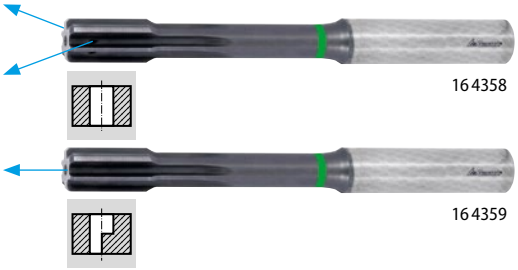
Garant

Through hole / blind hole HSS high-performance reamers, non-standard sizes and fits

Version suitable for NC with straight shank ∅ for the standardised toolholder, specially in **hydraulic chucks** or **high-accuracy chucks.**
This ensures **very high concentricity** and **process reliability**.
It is no longer necessary to procure special arbors.
With internal coolant feed for **HPC use** to reduce production costs.
With short, straight flutes.
Reamers finish ground to match your specifications.

Application:

16 4358 – For **HPC/HSC reaming** of **through holes.**
16 4359 – For **HPC/HSC reaming** of **blind holes.**



Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	GG	GGG	Uni
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	K	K	
16 4358/4359					45	45	35	35								40	30	●

Nominal ∅	10N 16 4358 HSS reamer HPC through hole TiAlN	10N 16 4359 HSS reamer HPC blind hole TiAlN	Tolerance	∅ range	L_A 16 4358	L_A 16 4359	L_{tot}	Number of cutting edges Z 16 4358	Number of cutting edges Z 16 4359		< 1100 N f	< 1100 N Drill ∅
mm				mm	mm	mm	mm			mm	mm/rev.	mm
6	(XXX)	(XXX)	–	6 – 6.7	58	39	100	6	6	8	0.12	–
6H7	XXX	XXX	H7	–	58	39	100	6	6	8	0.12	5.9
7	(XXX)	(XXX)	–	6.71 – 7.2	58	42	100	6	6	8	0.12	–
7H7	XXX	XXX	H7	–	58	42	100	6	6	8	0.12	6.9
7,5	(XXX)	(XXX)	–	7.21 – 7.7	59	44	100	6	6	8	0.12	–
8	(XXX)	(XXX)	–	7.71 – 8.2	59	46	100	6	6	8	0.12	–
8H7	XXX	XXX	H7	–	59	46	100	6	6	8	0.12	7.9
8,5	(XXX)	(XXX)	–	8.21 – 8.7	54	38	100	6	6	10	0.15	–
9	(XXX)	(XXX)	–	8.71 – 9.2	54	40	100	6	6	10	0.15	–
9H7	XXX	XXX	H7	–	54	40	100	6	6	10	0.15	8.9
9,5	(XXX)	(XXX)	–	9.21 – 9.7	75	60	120	6	6	10	0.15	–
10	(XXX)	(XXX)	–	9.71 – 10.2	75	60	120	6	6	10	0.15	–
10H7	XXX	XXX	H7	–	75	60	120	6	6	10	0.15	9.9
10,5	(XXX)	(XXX)	–	10.21 – 10.7	69	51	120	6	6	12	0.18	–
11	(XXX)	(XXX)	–	10.71 – 11.2	69	52	120	6	6	12	0.18	–
11H7	XXX	XXX	H7	–	69	52	120	6	6	12	0.18	10.9
11,5	(XXX)	(XXX)	–	11.21 – 11.7	70	53	120	6	6	12	0.18	–
12	(XXX)	(XXX)	–	11.71 – 12.2	70	54	120	6	6	12	0.18	–
12H7	XXX	XXX	H7	–	70	54	120	6	6	12	0.18	11.9
13	(XXX)	(XXX)	–	12.21 – 13.2	79	59	130	6	6	14	0.18	–
13H7	XXX	XXX	H7	–	79	59	130	6	6	14	0.18	12.8
14	(XXX)	(XXX)	–	13.21 – 14.2	80	63	130	6	6	14	0.18	–
14H7	XXX	XXX	H7	–	80	63	130	6	6	14	0.18	13.8
15	(XXX)	(XXX)	–	14.21 – 15.2	76	58	130	6	6	16	0.18	–
15H7	XXX	XXX	H7	–	76	58	130	6	6	16	0.18	14.8
16	(XXX)	(XXX)	–	15.21 – 16.2	97	78	150	6	6	16	0.18	–
16H7	XXX	XXX	H7	–	97	78	150	6	6	16	0.18	15.8
17	(XXX)	(XXX)	–	16.21 – 17.2	96	78	150	8	6	18	0.23	–
17H7	XXX	XXX	H7	–	96	78	150	8	6	18	0.23	16.8
18	(XXX)	(XXX)	–	17.21 – 18.2	97	80	150	8	6	18	0.23	–
18H7	XXX	XXX	H7	–	97	80	150	8	6	18	0.23	17.8
19	(XXX)	(XXX)	–	18.21 – 19.2	94	80	150	8	6	20	0.23	–
19H7	XXX	XXX	H7	–	94	80	150	8	6	20	0.23	18.8
20	(XXX)	(XXX)	–	19.21 – 20.2	95	82	150	8	6	20	0.23	–
20H7	XXX	XXX	H7	–	95	82	150	8	6	20	0.23	19.8
21	(XXX)	(XXX)	–	20.21 – 21.2	105	93	160	8	8	20	0.3	–
22	(XXX)	(XXX)	–	21.21 – 22.2	105	95	160	8	8	20	0.3	–
23	(XXX)	(XXX)	–	22.21 – 23.2	125	115	180	8	8	20	0.3	–
24	(XXX)	(XXX)	–	23.21 – 24.2	125	115	180	8	8	20	0.3	–
25	(XXX)	(XXX)	–	24.21 – 25.2	125	125	180	8	8	20	0.3	–
25H7	XXX	XXX	H7	–	125	125	180	8	8	20	0.3	24.7
26	(XXX)	(XXX)	–	25.21 – 26.2	125	125	180	8	8	20	0.4	–
27	(XXX)	(XXX)	–	26.21 – 27.2	125	125	180	8	8	20	0.4	–
28	(XXX)	(XXX)	–	27.21 – 28.2	119	119	180	8	8	25	0.4	–
29	(XXX)	(XXX)	–	28.21 – 29.2	119	119	180	8	8	25	0.4	–
30	(XXX)	(XXX)	–	29.21 – 30.2	139	139	200	8	8	25	0.4	–
30H7	XXX	XXX	H7	–	139	139	200	8	8	25	0.4	29.7
31	(XXX)	(XXX)	–	30.21 – 31.2	139	139	200	8	8	25	0.45	–
32	(XXX)	(XXX)	–	31.21 – 32.2	139	139	200	8	8	25	0.45	–
32H7	XXX	XXX	H7	–	139	139	200	8	8	25	0.45	31.7
33	(XXX)	(XXX)	–	32.21 – 33.2	139	139	200	8	8	25	0.45	–
34	(XXX)	(XXX)	–	33.21 – 34.2	139	139	200	8	8	25	0.45	–
35	(XXX)	(XXX)	–	34.21 – 35.2	139	139	200	8	8	25	0.45	–
36	(XXX)	(XXX)	–	35.21 – 36.2	139	139	200	8	8	25	0.45	–
36H7	XXX	XXX	H7	–	139	139	200	8	8	25	0.45	35.7
37	(XXX)	(XXX)	–	36.21 – 37.2	139	139	200	8	8	25	0.45	–
38	(XXX)	(XXX)	–	37.21 – 38.2	139	139	200	8	8	25	0.45	–
39	(XXX)	(XXX)	–	38.21 – 39.2	139	139	200	8	8	25	0.45	–
40	(XXX)	(XXX)	–	39.21 – 40.2	139	139	200	8	8	25	0.45	–

Solid carbide | Standard | 25 bar | h6 DIN 6535 HA | HPC

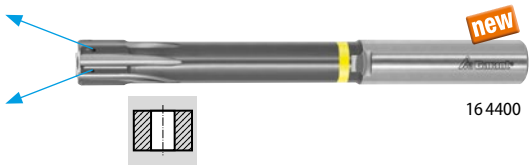
Garant

GARANT Master Alu solid carbide high-performance reamers for through / blind hole, non-standard sizes and fits

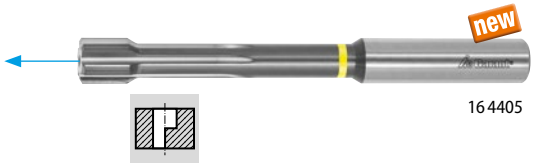
Special HPC reamers of the latest generation, **for machining aluminium,**
with improved tooth geometry and further developed carbide substrate.
Extra-short teeth for increased cutting performance values.Optimised cooling strategy
with radial coolant outlets aligned directly to the teeth.
Version suitable for NC with straight shank ∅ for standard arbors especially in
hydraulic chucks or **high precision collet chucks.**
Very high concentricity and process reliability due to unequal spacing of the teeth
and special profile of the round land width.
Reamers finish ground to match your specifications.
Both versions with straight flutes with DLC coating sp².

Application:

16 4400 – Special version for through holes.
16 4405 – Special version for blind holes.



16 4400



16 4405

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	Graphite GRP CRP	Uni
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	N	
16 4400/4405	250	250	250															

Nominal ∅	10P 16 4400 HPC through hole DLC	10P 16 4405 HPC blind hole DLC	Tolerance	∅ range	L_A	L_{tot}	Number of cutting edges Z		Alu cast > 10 % Si f	Hole ∅
	GARANT Master Steel solid carbide high-performance reamer									
mm				mm	mm	mm		mm	mm/rev.	mm
4	(XXX)	(XXX)	–	3.701 – 4.2	39	75	4	6	0.6	–
4H7	XXX	XXX	H7	–	39	75	4	6	0.6	3.9
4,5	(XXX)	(XXX)	–	4.201 – 4.7	39	75	4	6	0.6	–
5	(XXX)	(XXX)	–	4.701 – 5.2	39	75	4	6	0.6	–
5H7	XXX	XXX	H7	–	39	75	4	6	0.6	4.9
5,5	(XXX)	(XXX)	–	5.201 – 5.7	39	75	4	6	0.6	–
6	(XXX)	(XXX)	–	5.701 – 6.2	39	75	6	6	1	–
6H7	XXX	XXX	H7	–	39	75	6	6	1	5.9
6,5	(XXX)	(XXX)	–	6.201 – 6.7	64	100	6	8	1	–
7	(XXX)	(XXX)	–	6.701 – 7.2	64	100	6	8	1	–
7,5	(XXX)	(XXX)	–	7.201 – 7.7	64	100	6	8	1	–
8	(XXX)	(XXX)	–	7.701 – 8.2	64	100	6	8	1.5	–
8H7	XXX	XXX	H7	–	64	100	6	8	1.5	7.9
8,5	(XXX)	(XXX)	–	8.201 – 8.7	60	100	6	10	1.5	–
9	(XXX)	(XXX)	–	8.701 – 9.2	60	100	6	10	1.5	–
9,5	(XXX)	(XXX)	–	9.201 – 9.7	80	120	6	10	1.5	–
10	(XXX)	(XXX)	–	9.701 – 10.2	80	120	6	10	1.8	–
10H7	XXX	XXX	H7	–	80	120	6	10	1.8	9.9
10,5	(XXX)	(XXX)	–	10.201 – 10.7	75	120	6	12	1.8	–
11	(XXX)	(XXX)	–	10.701 – 11.2	75	120	6	12	1.8	–
11,5	(XXX)	(XXX)	–	11.201 – 11.7	75	120	6	12	1.8	–
12	(XXX)	(XXX)	–	11.701 – 12.2	75	120	6	12	2.1	–
12H7	XXX	XXX	H7	–	75	120	6	12	2.1	11.8
13	(XXX)	(XXX)	–	12.201 – 13.2	85	130	6	14	2.1	–
14	(XXX)	(XXX)	–	13.201 – 14.2	85	130	6	14	2.1	–
15	(XXX)	(XXX)	–	14.201 – 15.2	85	130	6	16	2.1	–
15H7	XXX	XXX	H7	–	85	130	6	16	2.1	14.8
16	(XXX)	(XXX)	–	15.201 – 16.2	102	150	6	16	2.1	–
16H7	XXX	XXX	H7	–	102	150	6	16	2.1	15.8
17	(XXX)	(XXX)	–	16.201 – 17.2	102	150	6	18	2.4	–
18	(XXX)	(XXX)	–	17.201 – 18.2	102	150	6	18	2.4	–
19	(XXX)	(XXX)	–	18.201 – 19.2	100	150	6	20	2.4	–
20	(XXX)	(XXX)	–	19.201 – 20.2	100	150	6	20	2.4	–

Solid carbide | Standard | 25 bar | h6 DIN 6535 HA | HPC

Garant

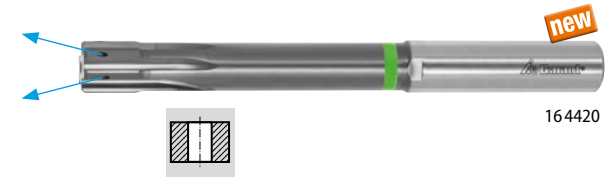
GARANT Master Steel solid carbide high-performance reamers for through holes / blind holes, non-standard sizes and fits

Universal HPC reamers of the latest generation, with improved tooth geometry and further developed carbide substrate.
Extra-short teeth for increased cutting performance values.
Optimised cooling strategy with radial coolant outlets aligned directly to the teeth.
For uncompromising applications in steel and stainless steel.

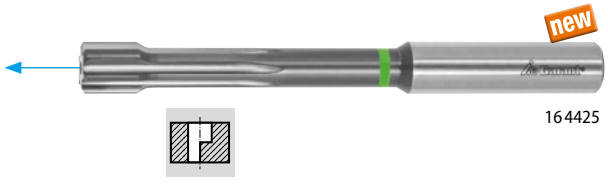
Version suitable for NC with straight shank ∅ for standard arbors especially in **hydraulic chucks** or **high precision collet chucks.**
Very high concentricity and process reliability due to unequal spacing of the teeth and special profile of the round land width.
Reamers finish ground to match your specifications.
Version with straight flutes with TiAlN coating.

Application:

16 4420 – Special version for through holes.
16 4425 – Special version for blind holes.



16 4420



16 4425

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	GG	GGG	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	K	K						
16 4420/4425				180	180	180	150	120						50	30	110	90	●		●	●		

Nominal ∅	10P 16 4420 HPC through hole TiAlN	10P 16 4425 HPC blind hole TiAlN	Tolerance	∅ range	L_A	L_{tot}	Number of cutting edges Z		< 1100 N f	INOX < 900 N f	Hole ∅
	GARANT Master Steel solid carbide high-performance reamer										
mm				mm	mm	mm		mm	mm/rev.	mm/rev.	mm
4	(XXX)	(XXX)	–	3.701 – 4.2	39	75	4	6	0.6	0.2	–
4H7	XXX	XXX	H7	–	39	75	4	6	0.6	0.2	3.9
4,5	(XXX)	(XXX)	–	4.201 – 4.7	39	75	4	6	0.6	0.2	–
5	(XXX)	(XXX)	–	4.701 – 5.2	39	75	4	6	0.6	0.2	–
5H7	XXX	XXX	H7	–	39	75	4	6	0.6	0.2	4.9
5,5	(XXX)	(XXX)	–	5.201 – 5.7	39	75	4	6	0.6	0.2	–
6	(XXX)	(XXX)	–	5.701 – 6.2	39	75	6	6	1	0.3	–
6H7	XXX	XXX	H7	–	39	75	6	6	1	0.3	5.9
6,5	(XXX)	(XXX)	–	6.201 – 6.7	64	100	6	8	1	0.3	–
7	(XXX)	(XXX)	–	6.701 – 7.2	64	100	6	8	1	0.3	–
7,5	(XXX)	(XXX)	–	7.201 – 7.7	64	100	6	8	1	0.3	–
8	(XXX)	(XXX)	–	7.701 – 8.2	64	100	6	8	1.2	0.3	–
8H7	XXX	XXX	H7	–	64	100	6	8	1.2	0.3	7.9
8,5	(XXX)	(XXX)	–	8.201 – 8.7	60	100	6	10	1.2	0.3	–
9	(XXX)	(XXX)	–	8.701 – 9.2	60	100	6	10	1.2	0.3	–
9,5	(XXX)	(XXX)	–	9.201 – 9.7	80	120	6	10	1.2	0.3	–
10	(XXX)	(XXX)	–	9.701 – 10.2	80	120	6	10	1.4	0.4	–
10H7	XXX	XXX	H7	–	80	120	6	10	1.4	0.4	9.9
10,5	(XXX)	(XXX)	–	10.201 – 10.7	75	120	6	12	1.4	0.4	–
11	(XXX)	(XXX)	–	10.701 – 11.2	75	120	6	12	1.4	0.4	–
11,5	(XXX)	(XXX)	–	11.201 – 11.7	75	120	6	12	1.4	0.4	–
12	(XXX)	(XXX)	–	11.701 – 12.2	75	120	6	12	1.7	0.5	–
12H7	XXX	XXX	H7	–	75	120	6	12	1.7	0.5	11.8
13	(XXX)	(XXX)	–	12.201 – 13.2	85	130	6	14	1.7	0.5	–
14	(XXX)	(XXX)	–	13.201 – 14.2	85	130	6	14	1.7	0.5	–
15	(XXX)	(XXX)	–	14.201 – 15.2	85	130	6	16	1.7	0.5	–
15H7	XXX	XXX	H7	–	85	130	6	16	1.7	0.5	14.8
16	(XXX)	(XXX)	–	15.201 – 16.2	102	150	6	16	1.7	0.5	–
16H7	XXX	XXX	H7	–	102	150	6	16	1.7	0.5	15.8
17	(XXX)	(XXX)	–	16.201 – 17.2	102	150	6	18	2	0.6	–
18	(XXX)	(XXX)	–	17.201 – 18.2	102	150	6	18	2	0.6	–
19	(XXX)	(XXX)	–	18.201 – 19.2	100	150	6	20	2	0.6	–
20	(XXX)	(XXX)	–	19.201 – 20.2	100	150	6	20	2	0.6	–

Solid carbide | Standard | 25 bar | h6 DIN 6535 HA | HPC

Garant

Through hole / blind hole solid carbide high-performance reamers, non-standard sizes and fits

Version suitable for NC with straight shank ∅ for standard arbors especially in **hydraulic chucks** or **high precision collet chucks.**
This gives **very high concentricity** and **process reliability**.
No need to procure special collets.
With internal coolant supply for **HPC applications** to reduce manufacturing costs.
Reamers finish ground to match your specifications.

16 4348 – With short, straight flutes.
16 4346/4347 – With the latest generation of **DLC coating sp²**.

Application:

16 4347 – For **HPC/HSC reaming** of **blind holes.**
16 4346/4348 – For **HPC/HSM reaming** of **through holes.**

16 4346

Type W

16 4347

Type W

16 4348

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	Graphite GRP CRP	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	N						
16 4346/4347	250	250	250																	●	●		
16 4348									12	8	6								●	●			

Nominal ∅	16 4346	16 4347	16 4348	Toler-ance	∅ range	L_A	L_{tot}	Number of cutting edges Z		Alu Guss > 10 % Si f	Alu Guss > 10 % Si Drill ∅	< 60 HRC f	< 60 HRC Drill ∅
	Solid carbide reamer												
	HPC through hole	HPC blind hole	HPC through hole							16 4346 16 4347	16 4346 16 4347	16 4348	16 4348
mm	DLC	DLC	TiAlN		mm	mm	mm		mm	mm/rev.	mm	mm/rev.	mm
4	(XXX)	(XXX)	(XXX)	–	3.7 – 4.2	34	75	4	6	0.6	–	0.05	–
4H7	XXX	XXX	XXX	H7	–	34	75	4	6	0.6	3.9	0.05	3.9
4,5	(XXX)	(XXX)	(XXX)	–	4.21 – 4.7	34	75	4	6	0.6	–	0.05	–
5	(XXX)	(XXX)	(XXX)	–	4.71 – 5.2	35	75	4	6	0.8	–	0.06	–
5H7	XXX	XXX	XXX	H7	–	35	75	4	6	0.8	4.9	0.06	4.9
5,5	(XXX)	(XXX)	(XXX)	–	5.21 – 5.7	35	75	4	6	0.8	–	0.06	–
6	(XXX)	(XXX)	(XXX)	–	5.71 – 6.2	35	75	4	6	0.8	–	0.06	–
6H7	XXX	XXX	XXX	H7	–	35	75	4	6	0.8	5.9	0.06	5.9
6,5	(XXX)	(XXX)	(XXX)	–	6.21 – 6.7	59	100	6	8	1.2	–	0.08	–
7	(XXX)	(XXX)	(XXX)	–	6.71 – 7.2	59	100	6	8	1.2	–	0.08	–
7,5	(XXX)	(XXX)	(XXX)	–	7.21 – 7.7	60	100	6	8	1.2	–	0.1	–
8	(XXX)	(XXX)	(XXX)	–	7.71 – 8.2	60	100	6	8	1.4	–	0.1	–
8H7	XXX	XXX	XXX	H7	–	60	100	6	8	1.4	7.9	0.1	7.9
8,5	(XXX)	(XXX)	(XXX)	–	8.21 – 8.7	55	100	6	10	1.4	–	0.12	–
9	(XXX)	(XXX)	(XXX)	–	8.71 – 9.2	55	100	6	10	1.4	–	0.12	–
9,5	(XXX)	(XXX)	(XXX)	–	9.21 – 9.7	76	120	6	10	1.4	–	0.12	–
10	(XXX)	(XXX)	(XXX)	–	9.71 – 10.2	76	120	6	10	1.4	–	0.12	–
10H7	XXX	XXX	XXX	H7	–	76	120	6	10	1.4	9.8	0.12	9.9
10,5	(XXX)	(XXX)	(XXX)	–	10.21 – 10.7	70	120	6	12	1.4	–	0.15	–
11	(XXX)	(XXX)	(XXX)	–	10.71 – 11.2	70	120	6	12	1.4	–	0.15	–
11,5	(XXX)	(XXX)	(XXX)	–	11.21 – 11.7	71	120	6	12	1.4	–	0.15	–
12	(XXX)	(XXX)	(XXX)	–	11.71 – 12.2	71	120	6	12	1.5	–	0.15	–
12H7	XXX	XXX	XXX	H7	–	71	120	6	12	1.5	11.8	0.15	11.9
13	(XXX)	(XXX)	(XXX)	–	12.21 – 13.2	80	130	6	14	1.5	–	0.15	–
14	(XXX)	(XXX)	(XXX)	–	13.21 – 14.2	80	130	6	14	1.5	–	0.15	–
15	(XXX)	(XXX)	(XXX)	–	14.21 – 15.2	77	130	6	16	1.5	–	0.15	–
15H7	–	–	XXX	H7	–	77	130	6	16	–	–	0.15	14.9
16	(XXX)	(XXX)	(XXX)	–	15.21 – 16.2	97	150	6	16	1.7	–	0.15	–
16H7	XXX	XXX	XXX	H7	–	97	150	6	16	1.7	15.8	0.15	15.9
17	(XXX)	(XXX)	(XXX)	–	16.21 – 17.2	97	150	6	18	1.7	–	0.16	–
18	(XXX)	(XXX)	(XXX)	–	17.21 – 18.2	97	150	6	18	1.7	–	0.16	–
19	(XXX)	(XXX)	(XXX)	–	18.21 – 19.2	95	150	6	20	1.7	–	0.16	–
20	(XXX)	(XXX)	(XXX)	–	19.21 – 20.2	95	150	6	20	1.7	–	0.16	–

Solid carbide | Standard | 25 bar | h6 DIN 6535 HA | HPC

Garant

Through hole / blind hole solid carbide high-performance reamers, non-standard sizes and fits

Version suitable for NC with straight shank ∅ for standard arbors especially in **hydraulic chucks** or **high precision collet chucks.** This gives **very high concentricity** and **process reliability**. No need to procure special collets. With internal coolant supply for **HPC applications** to reduce manufacturing costs.

Reamers finish ground to match your specifications.

16 4351 – With short, straight flutes.

16 4352 – **Reamers finish ground to match your specifications.**

16 4350/4352 – With short flutes and left-hand helix.

Application:

16 4351 – For **HPC/HSC reaming** of **blind holes.**

16 4350/4352 – For **HPC/HSM reaming** of **through holes.**

16 4350

16 4351

16 4352

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	Graphite GRP CRP	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	N						
16 4350/4351														30	25				●	●			
16 4352																20				●			

Nominal ∅	10N 16 4350	10N 16 4351	10N 16 4352	Tolerance	∅ range	L_A		L_{tot}	Number of cutting edges Z			INOX < 900 N f	INOX < 900 N Drill ∅	Ti > 850 N f	Ti > 850 N Drill ∅
	Solid carbide reamer														
	HPC through hole	HPC blind hole	HPC through hole			16 4350 16 4352	16 4351		16 4350 16 4352	16 4351					
mm	TiAlN	TiAlN	TiAlN		mm	mm	mm	mm			mm	mm/rev.	mm	mm/rev.	mm
4	(XXX)	(XXX)	(XXX)	–	3.7 – 4.2	34	34	75	4	4	6	0.06	–	0.05	–
4H7	XXX	XXX	XXX	H7	–	34	34	75	4	4	6	0.06	3.9	0.05	3.9
4,5	(XXX)	(XXX)	(XXX)	–	4.21 – 4.7	34	34	75	4	4	6	0.06	–	0.05	–
5	(XXX)	(XXX)	(XXX)	–	4.71 – 5.2	35	34	75	4	4	6	0.06	–	0.05	–
5H7	XXX	XXX	XXX	H7	–	35	34	75	4	4	6	0.06	4.9	0.05	4.9
5,5	(XXX)	(XXX)	(XXX)	–	5.21 – 5.7	35	34	75	4	4	6	0.06	–	0.05	–
6	(XXX)	(XXX)	(XXX)	–	5.71 – 6.2	35	34	75	4	4	6	0.06	–	0.05	–
6H7	XXX	XXX	XXX	H7	–	35	34	75	4	4	6	0.06	5.9	0.05	5.9
6,5	(XXX)	(XXX)	(XXX)	–	6.21 – 6.7	59	58	100	6	6	8	0.12	–	0.09	–
7	(XXX)	(XXX)	(XXX)	–	6.71 – 7.2	59	58	100	6	6	8	0.12	–	0.09	–
7,5	(XXX)	(XXX)	(XXX)	–	7.21 – 7.7	60	58	100	6	6	8	0.15	–	0.09	–
8	(XXX)	(XXX)	(XXX)	–	7.71 – 8.2	60	58	100	6	6	8	0.15	–	0.09	–
8H7	XXX	XXX	XXX	H7	–	60	58	100	6	6	8	0.15	7.9	0.09	7.9
8,5	(XXX)	(XXX)	(XXX)	–	8.21 – 8.7	55	54	100	6	6	10	0.15	–	0.09	–
9	(XXX)	(XXX)	(XXX)	–	8.71 – 9.2	55	54	100	6	6	10	0.15	–	0.09	–
9,5	(XXX)	(XXX)	(XXX)	–	9.21 – 9.7	76	74	120	6	6	10	0.15	–	0.09	–
10	(XXX)	(XXX)	(XXX)	–	9.71 – 10.2	76	74	120	6	6	10	0.2	–	0.1	–
10H7	XXX	XXX	XXX	H7	–	76	74	120	6	6	10	0.2	9.9	0.1	9.9
10,5	(XXX)	(XXX)	(XXX)	–	10.21 – 10.7	70	68	120	6	6	12	0.2	–	0.1	–
11	(XXX)	(XXX)	(XXX)	–	10.71 – 11.2	70	68	120	6	6	12	0.2	–	0.1	–
11,5	(XXX)	(XXX)	(XXX)	–	11.21 – 11.7	71	68	120	6	6	12	0.2	–	0.1	–
12	(XXX)	(XXX)	(XXX)	–	11.71 – 12.2	71	68	120	6	6	12	0.2	–	0.1	–
12H7	XXX	XXX	XXX	H7	–	71	68	120	6	6	12	0.2	11.9	0.1	11.8
13	(XXX)	(XXX)	(XXX)	–	12.21 – 13.2	80	78	130	6	6	14	0.2	–	0.1	–
14	(XXX)	(XXX)	(XXX)	–	13.21 – 14.2	80	78	130	6	6	14	0.2	–	0.1	–
15	(XXX)	(XXX)	(XXX)	–	14.21 – 15.2	77	75	130	6	6	16	0.23	–	0.1	–
15H7	XXX	XXX	XXX	H7	–	77	75	130	6	6	16	0.23	14.8	0.1	14.8
16	(XXX)	(XXX)	(XXX)	–	15.21 – 16.2	97	95	150	6	6	16	0.23	–	0.1	–
16H7	XXX	XXX	XXX	H7	–	97	95	150	6	6	16	0.23	15.8	0.1	15.8
17	(XXX)	(XXX)	(XXX)	–	16.21 – 17.2	97	95	150	8	6	18	0.35	–	0.16	–
18	(XXX)	(XXX)	(XXX)	–	17.21 – 18.2	97	95	150	8	6	18	0.35	–	0.16	–
19	(XXX)	(XXX)	(XXX)	–	18.21 – 19.2	95	92	150	8	6	20	0.35	–	0.16	–
20	(XXX)	(XXX)	(XXX)	–	19.21 – 20.2	95	92	150	8	6	20	0.4	–	0.16	–

Solid carbide | Standard | Type W | 25 bar | h6 DIN 6535 HA | HPC

Through hole / blind hole solid carbide high-performance reamers, non-standard sizes and fits

With the latest generation of **crystalline diamond coating sp³**, for process reliability in machining **fibre-reinforced composites, CRP, GRP, and graphite.**
Version suitable for NC with straight shank ∅ for standard arbors especially in **hydraulic chucks** or **high precision collet chucks.**
This gives **very high concentricity** and **process reliability**.
No need to procure special collets.
With internal coolant supply for **HPC applications** to reduce manufacturing costs.
Reamers finish ground to match your specifications.

16 4355 – With short flutes and left-hand helix.
16 4357 – With short, straight flutes.

Application:

16 4355 – For **HPC/HSM reaming** of **through holes.**
16 4357 – For **HPC/HSC reaming** of **blind holes.**

16 4355

16 4357

Suitable for/ v_c [m/min]	PMMA acrylic	PE-HD	PA 66	PEEK	PF 31	AFRP aramid	PVDF GF20	POM GF25	PA 66 GF30	PEEK GF30	PTFE CF25	PEEK CF30	Hybrid	Honey-comb sandwich	Inconel®	MMC	GRP CRP	Graphite
ISO code	N	N	N	N	N	N	N	N	N	N	N	N	N	N	S	N	N	N
16 4355/4357	40	40	40	50	30		60	55	60	100	100	90	●			●	100	100

Nominal ∅	10N 16 4355 HPC through hole Diamond	10N 16 4357 HPC blind hole Diamond	∅ range	L_A	L_{tot}	Number of cutting edges Z 16 4355	Number of cutting edges Z 16 4357		GRP CRP f	PEEK CF30 f
	Solid carbide reamers									
mm			mm	mm	mm			mm	mm/rev.	mm/rev.
4	(XXX)	(XXX)	3.7 – 4.2	34	75	4	4	6	0.7	0.8
4,5	(XXX)	(XXX)	4.21 – 4.7	34	75	4	4	6	0.7	0.8
5	(XXX)	(XXX)	4.71 – 5.2	35	75	4	4	6	0.8	1
5,5	(XXX)	(XXX)	5.21 – 5.7	35	75	4	4	6	0.8	1
6	(XXX)	(XXX)	5.71 – 6.2	35	75	4	4	6	0.8	1
6,5	(XXX)	(XXX)	6.21 – 6.7	59	100	6	6	8	0.8	1.5
7	(XXX)	(XXX)	6.71 – 7.2	59	100	6	6	8	0.8	1.5
7,5	(XXX)	(XXX)	7.21 – 7.7	60	100	6	6	8	0.8	1.5
8	(XXX)	(XXX)	7.71 – 8.2	60	100	6	6	8	1	1.5
8,5	(XXX)	(XXX)	8.21 – 8.7	55	100	6	6	10	1	1.5
9	(XXX)	(XXX)	8.71 – 9.2	55	100	6	6	10	1	1.5
9,5	(XXX)	(XXX)	9.21 – 9.7	76	120	6	6	10	1	1.5
10	(XXX)	(XXX)	9.71 – 10.2	76	120	6	6	10	1	1.5
10,5	(XXX)	(XXX)	10.21 – 10.7	70	120	6	6	12	1	1.5
11	(XXX)	(XXX)	10.71 – 11.2	70	120	6	6	12	1	1.5
11,5	(XXX)	(XXX)	11.21 – 11.7	71	120	6	6	12	1	1.5
12	(XXX)	(XXX)	11.71 – 12.2	71	120	6	6	12	1.2	1.5
13	(XXX)	(XXX)	12.21 – 13.2	80	130	6	6	14	1.2	1.5
14	(XXX)	(XXX)	13.21 – 14.2	80	130	6	6	14	1.2	1.5
15	(XXX)	(XXX)	14.21 – 15.2	77	130	6	6	16	1.2	1.5
16	(XXX)	(XXX)	15.21 – 16.2	97	150	6	6	16	1.6	1.5
17	(XXX)	(XXX)	16.21 – 17.2	97	150	8	6	18	1.6	2
18	(XXX)	(XXX)	17.21 – 18.2	97	150	8	6	18	1.6	2
19	(XXX)	(XXX)	18.21 – 19.2	95	150	8	6	20	1.6	2
20	(XXX)	(XXX)	19.21 – 20.2	95	150	8	6	20	1.6	2

Solid carbide | Standard | h6 DIN 6535 HA | HPC | H7 | 0 +0.004

Garant

Through / blind hole solid carbide high-performance reamers

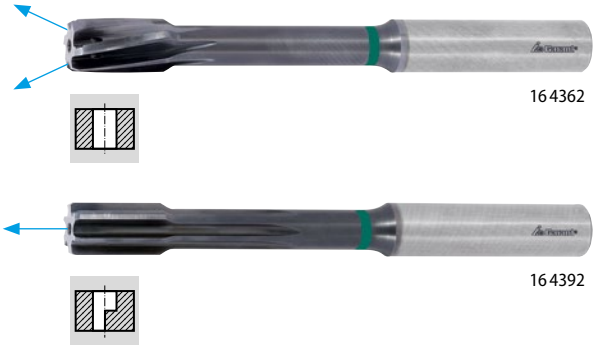
Version suitable for NC with straight shank ∅ for standard arbors especially in **hydraulic chucks** or **high precision collet chucks.** For **highest concentricity** and **process reliability**. No need to procure special collets. With internal coolant supply for **HPC applications** to reduce manufacturing costs.

Reamer manufacturing tolerances:
whole number sizes and ∅ 0.5: H7 to DIN 1420
1/100 sizes ∅ 3.97 – 12.03: +0.004/0

16 4362 – With short flutes and left-hand helix.
16 4392 – With short, straight flutes.

Application:

16 4362 – For **HPC/HSM reaming** of **through holes.**
16 4392 – For **HPC/HSC reaming** of **blind holes.**



16 4362

16 4392

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	GG	GGG	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	K	K						
16 4362/4392					120	120	120									80	60	●		●	●		

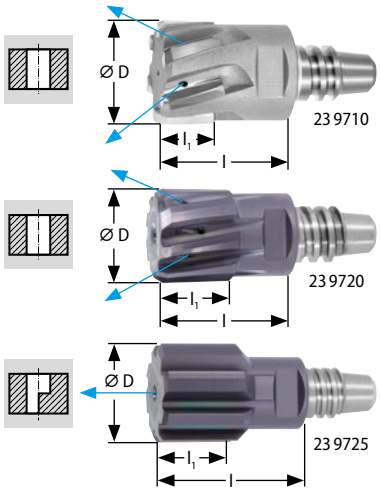
Nominal ∅	10N 16 4362	10N 16 4392	Tolerance	L_A	L_{tot}	Number of cutting edges Z		< 1100 N f	< 1100 N Drill ∅
	Solid carbide reamers								
	HPC through hole	HPC blind hole							
mm	TiAlN	TiAlN		mm	mm		mm	mm/rev.	mm
3,97	XXX	(XXX)	0 / 0.004	34	75	4	6	0.3	3.9
3,98	XXX	(XXX)	0 / 0.004	34	75	4	6	0.3	3.9
3,99	XXX	(XXX)	0 / 0.004	34	75	4	6	0.3	3.9
4	XXX	XXX	H7	34	75	4	6	0.3	3.9
4,01	XXX	(XXX)	0 / 0.004	34	75	4	6	0.3	3.9
4,02	XXX	(XXX)	0 / 0.004	34	75	4	6	0.3	3.9
4,03	XXX	(XXX)	0 / 0.004	34	75	4	6	0.3	3.9
4,97	(XXX)	(XXX)	0 / 0.004	35	75	4	6	0.4	4.9
4,98	(XXX)	(XXX)	0 / 0.004	35	75	4	6	0.4	4.9
4,99	XXX	(XXX)	0 / 0.004	35	75	4	6	0.4	4.9
5	XXX	XXX	H7	35	75	4	6	0.4	4.9
5,01	XXX	(XXX)	0 / 0.004	35	75	4	6	0.4	4.9
5,02	XXX	(XXX)	0 / 0.004	35	75	4	6	0.4	4.9
5,03	XXX	(XXX)	0 / 0.004	35	75	4	6	0.4	4.9
5,97	XXX	(XXX)	0 / 0.004	35	75	4	6	0.4	5.9
5,98	XXX	(XXX)	0 / 0.004	35	75	4	6	0.4	5.9
5,99	XXX	(XXX)	0 / 0.004	35	75	4	6	0.4	5.9
6	XXX	XXX	H7	35	75	4	6	0.4	5.9
6,01	XXX	(XXX)	0 / 0.004	35	75	4	6	0.4	5.9
6,02	XXX	(XXX)	0 / 0.004	35	75	4	6	0.4	5.9
6,03	XXX	(XXX)	0 / 0.004	35	75	4	6	0.4	5.9
7,97	(XXX)	(XXX)	0 / 0.004	60	100	6	8	0.6	7.9
7,98	XXX	(XXX)	0 / 0.004	60	100	6	8	0.6	7.9
7,99	XXX	(XXX)	0 / 0.004	60	100	6	8	0.6	7.9
8	XXX	XXX	H7	60	100	6	8	0.6	7.9
8,01	XXX	(XXX)	0 / 0.004	60	100	6	8	0.6	7.9
8,02	XXX	(XXX)	0 / 0.004	60	100	6	8	0.6	7.9
8,03	XXX	(XXX)	0 / 0.004	60	100	6	8	0.6	7.9
9,97	XXX	(XXX)	0 / 0.004	76	120	6	10	0.6	9.8
9,98	XXX	(XXX)	0 / 0.004	76	120	6	10	0.6	9.8
9,99	XXX	(XXX)	0 / 0.004	76	120	6	10	0.6	9.8
10	XXX	XXX	H7	76	120	6	10	0.6	9.8
10,01	XXX	(XXX)	0 / 0.004	76	120	6	10	0.6	9.8
10,02	XXX	(XXX)	0 / 0.004	76	120	6	10	0.6	9.8
10,03	XXX	(XXX)	0 / 0.004	76	120	6	10	0.6	9.8
11,97	(XXX)	(XXX)	0 / 0.004	71	120	6	12	0.7	11.8
11,98	XXX	(XXX)	0 / 0.004	71	120	6	12	0.7	11.8
11,99	XXX	(XXX)	0 / 0.004	71	120	6	12	0.7	11.8
12	XXX	XXX	H7	71	120	6	12	0.7	11.8
12,01	XXX	(XXX)	0 / 0.004	71	120	6	12	0.7	11.8
12,02	XXX	(XXX)	0 / 0.004	71	120	6	12	0.7	11.8
12,03	XXX	(XXX)	0 / 0.004	71	120	6	12	0.7	11.8
13	XXX	–	H7	80	130	6	14	0.8	12.8
14	XXX	–	H7	80	130	6	14	0.8	13.8
15	XXX	–	H7	77	130	6	16	0.8	14.8
16	XXX	–	H7	97	150	6	16	0.8	15.8
17	XXX	–	H7	97	150	8	18	1.1	16.8
18	XXX	–	H7	97	150	8	18	1.1	17.8
19	XXX	–	H7	95	150	8	20	1.1	18.8
20	XXX	–	H7	95	150	8	20	1.1	19.8

Standard | H7 | HPC

TopCut REAM reaming heads

Interchangeable head reamer system **finish ground for fit IT7.** Cutter geometry matched to the application.
System concentricity ≤ 5 µm (depending on the head and holder) when mounted.
23 9710/9720/9730 – With short flutes and left-hand helix.
23 9715/9725/9735 – With short, straight flutes.
Application: For HPC/HSC reaming.
23 9710/9720/9730 – **For through holes.**
23 9715/9725/9735 – **For blind holes.**

Note: **Total usable length** = L_1 (arbor No. 239740 / 239745) + l (interchangeable head No. 239710 to 239735).
Clamping wrench = No. 219987.
Insert for torque wrench = No. 219986.
Further sizes available on request.



Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG	GGG					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	K	K					
23 9710/9715				140	140	140	120										160	140	●	●			
23 9720/9725					120	120	120										80	60		●	●		
23 9730/9735														30	25				●	●			

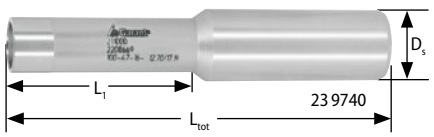
Nominal Ø D	23A 23 9710 / 23A 23 9715 Cermet reaming head HPC H7 steel		23A 23 9720 / 23A 23 9725 Solid carbide reaming head HPC H7 steel		23A 23 9730 / 23A 23 9735 Solid carbide reaming head HPC H7 stainless steel		Arbor size		l_1		l	Z		< 1100 N f	INOX < 900 N f	
	Through hole	Blind hole	Through hole	Blind hole	Through hole	Blind hole	23 9710 23 9720 23 9730	23 9715 23 9725 23 9735	23 9710 23 9715	23 9720 23 9725 23 9730 23 9735		23 9710 23 9715	23 9720 23 9725 23 9730 23 9735	23 9710 23 9715	23 9720 23 9725	23 9730 23 9735
mm			TiAlN	TiAlN	TiAlN	TiAlN	mm	mm	mm	mm	mm			mm/rev.	mm/rev.	mm/rev.
10	XXX	–	XXX	–	XXX	–	10	–	8	10	18	6	6	0.36	0.6	0.2
11	XXX	–	XXX	–	XXX	–	10	–	8	10	20	6	6	0.36	0.6	0.2
12	XXX	–	XXX	–	XXX	–	10	–	8	10	20	6	6	0.36	0.6	0.2
13	XXX	–	XXX	–	XXX	–	12	–	8	10	22	6	6	0.36	0.7	0.2
14	XXX	–	XXX	–	XXX	–	12	–	8	12	22	6	6	0.36	0.7	0.2
15	XXX	XXX	XXX	XXX	XXX	XXX	12	10	8	12	22	6	6	0.6	0.8	0.25
16	XXX	XXX	XXX	XXX	XXX	XXX	12	10	8	12	22	6	6	0.6	0.8	0.25
17	XXX	XXX	XXX	XXX	XXX	XXX	12	12	8	12	22	6	8	0.6	1.1	0.35
18	XXX	XXX	XXX	XXX	XXX	XXX	16	12	12	14	26	6	8	0.6	1.1	0.35
19	XXX	XXX	XXX	XXX	XXX	XXX	16	12	12	14	26	6	8	0.6	1.1	0.35
20	XXX	XXX	XXX	XXX	XXX	XXX	16	12	12	14	26	6	8	0.6	1.1	0.4
21	XXX	XXX	XXX	XXX	XXX	XXX	16	12	12	14	26	6	8	0.6	1.2	0.4
22	XXX	XXX	XXX	XXX	XXX	XXX	20	16	12	14	26	6	8	0.6	1.2	0.4
23	XXX	XXX	XXX	XXX	XXX	XXX	20	16	12	14	26	6	8	0.6	1.2	0.5
24	XXX	XXX	XXX	XXX	XXX	XXX	20	16	12	14	26	6	8	0.6	1.4	0.5
25	XXX	XXX	XXX	XXX	XXX	XXX	20	16	12	14	26	6	8	0.6	1.4	0.5
26	XXX	XXX	XXX	XXX	XXX	XXX	20	20	12	14	26	6	8	0.6	1.4	0.5
28	XXX	XXX	–	–	–	–	24	20	12	–	26	6	–	0.6	–	–
30	XXX	XXX	–	–	–	–	24	20	12	–	26	8	–	0.8	–	–
32	XXX	XXX	–	–	–	–	24	24	12	–	30	8	–	0.8	–	–
34	XXX	XXX	–	–	–	–	29	24	12	–	30	8	–	0.8	–	–
36	XXX	XXX	–	–	–	–	29	24	12	–	30	8	–	0.8	–	–
38	XXX	XXX	–	–	–	–	29	24	12	–	30	8	–	0.8	–	–
40	XXX	XXX	–	–	–	–	29	24	12	–	30	8	–	0.8	–	–
42	XXX	XXX	–	–	–	–	29	29	12	–	30	8	–	0.8	–	–
44	XXX	XXX	–	–	–	–	29	29	12	–	30	8	–	0.8	–	–
46	XXX	XXX	–	–	–	–	29	29	12	–	30	8	–	0.8	–	–
48	XXX	XXX	–	–	–	–	29	29	12	–	30	8	–	0.8	–	–
50	XXX	XXX	–	–	–	–	29	29	12	–	30	8	–	0.8	–	–

h6 DIN 6535 HA

TopCut REAM reaming head arbors

Version suitable for NC with straight shank Ø for standard arbors especially in **hydraulic chucks** or **high precision collet chucks** for very high accuracy and process reliability.

Note: For further arbors see No. 210550 – 210582 and 212000.



Type	23A 23 9740 Arbor 90°, cylindrical with IC short	23A 23 9745 Arbor 90°, cylindrical with IC long	suitable for through hole Ø	suitable for blind hole Ø	L_{tot} 23 9740	L_{tot} 23 9745	L_1 23 9740	L_1 23 9745	Ø D_s h6	recommended tightening torque
			mm	mm	mm	mm	mm	mm	mm	N·m
10	XXX	XXX	10 – 12.7	14 – 16.2	90	120	35	65	16	5
12	XXX	XXX	12.71 – 17.2	16.21 – 21.2	100	140	47	87	16	10
16	XXX	XXX	17.21 – 21.2	21.21 – 25.2	108	160	65	105	20	15
20	XXX	XXX	21.21 – 26.2	25.21 – 30.2	140	200	78	138	25	20
24	XXX	XXX	26.21 – 32.2	30.21 – 40.2	142	202	84	144	25	25
29	XXX	XXX	32.21 – 50	40.21 – 50	146	216	82.5	152.5	32	35

H7

KOMET® REAMAX® TS reaming head H7, adjustable

Reaming heads **finish ground for fit H7.**
Cutter geometry matched to the application. Adjustable down to the µm range for wear compensation and for very tight basic tolerances down to IT4. For use in through holes up to 5×D.

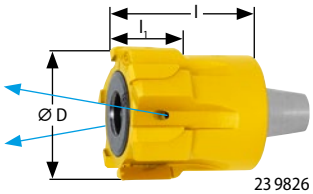
23 9805 – In geometry **ASG0706** with lead angle 8°+ 45°.
For **blind and through holes.**

23 9816 – In geometry **ASG4000** straight cut with lead angle 25°.
Especially for **through holes in steel.**

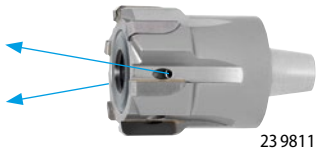
23 9826 – For interrupted machining.

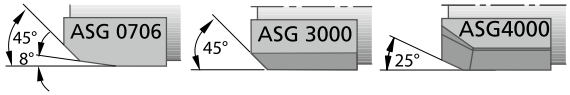
23 9811/9822/9826 – In geometry **ASG3000** with lead angle 45° and additional chip flute for positive chip clearance along the cutting edge. For **blind and through holes.**

Note:
- Other sizes available on request on short lead times.
- See No. 239880 – 239940 for suitable holders.
- Application data apply to through holes.



23 9826


23 9811



Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	GGG	CuZn	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	K	N						
23 9805	160	140	140																●				
23 9811				180	160	140	100									140			●				
23 9816				180	160	140													●				
23 9822									40							180			●				
23 9826				120	100	80	70							25	15		100	●	●				

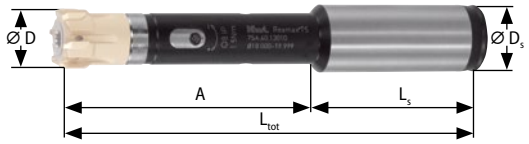
Nominal Ø D	27E 23 9805	27E 23 9811	27E 23 9816	27E 23 9822	27E 23 9826	for toolholders 239880 – 239940	l_1	l	Z	< 750 N f
	KOMET REAMAX® TS reaming head H7									
	Carbide ASG0706	Cermet ASG3000	Cermet ASG4000	Carbide ASG3000	Carbide ASG3000					
mm	DBC	DST	DST	DGB-P	TiN		mm	mm		mm/rev.
18	(XXX)	XXX	XXX	(XXX)	XXX	18 – 19,99	6	20	6	0.8
20	(XXX)	XXX	XXX	(XXX)	XXX	20 – 21.99	6	20	6	0.8
22	(XXX)	XXX	XXX	(XXX)	XXX	22 – 26.99	6	20	6	0.8
24	(XXX)	XXX	XXX	(XXX)	XXX	22 – 26.99	6	20	6	0.8
25	(XXX)	XXX	XXX	(XXX)	XXX	22 – 26.99	6	20	6	0.8
28	(XXX)	XXX	XXX	(XXX)	XXX	27 – 34.99	6	25	6	0.9
30	(XXX)	XXX	XXX	(XXX)	XXX	27 – 34.99	6	25	6	0.9
32	(XXX)	XXX	XXX	(XXX)	XXX	27 – 34.99	6	25	8	1.2
35	(XXX)	XXX	XXX	(XXX)	XXX	35 – 41.99	6	25	8	1.2
40	(XXX)	XXX	XXX	(XXX)	XXX	35 – 41.99	6	25	8	1.2
50	(XXX)	XXX	XXX	(XXX)	XXX	42 – 51,99	6	25	8	1.2

KOMET® REAMAX® TS holder and DAH® Zero

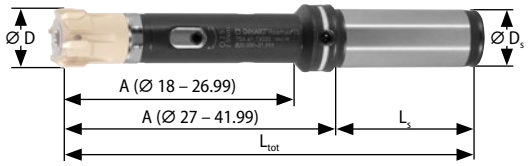
23 9930/9940 – The holder is pre-loaded and set to < 0.005 mm run-out. For run-out accuracies to precision < 3 µm, longer tool life, and higher process reliability.

Suitable for: Reaming heads No. 239805; 239811; 239816; 239822; 239826.

Supplied with: Holder complete with pull stud, spanner for pull stud and activation key.
Please order a hexagon key L-wrench separately if required.



23 9880



23 9930

for reaming head Ø D	27E 23 9880	27E 23 9890	27E 23 9930	27E 23 9940	A		L_{tot}				L_s	Ø D_s h6	Pull stud 239900	Spanner 239901	Activation wrench 239902
	KOMET Reamax® TS holder		KOMET Reamax® TS holder DAH® Zero												
	Plain shank														
					23 9880 23 9930	23 9890 23 9940	23 9880	23 9890	23 9930	23 9940					
mm	short	long	short	long	mm	mm	mm	mm	mm	mm	mm	mm			
18-19,99	XXX	XXX	(XXX)	(XXX)	80	140	130	190	145	205	50	20	1	5AF	8IP (1.5Nm)
20-21,99	XXX	XXX	(XXX)	(XXX)	80	140	130	190	145	205	50	20	2	5AF	2.5AF (2.5Nm)
22-26,99	XXX	XXX	(XXX)	(XXX)	80	160	130	210	145	225	50	20	3	SW6	3AF (4Nm)
27-34,99	XXX	XXX	(XXX)	(XXX)	120	180	176	236	176	236	56	25	4	8AF	3AF (5Nm)
35-41,99	XXX	XXX	(XXX)	(XXX)	120	200	176	256	176	256	56	25	5	10AF	3AF (6Nm)
42-51,99	XXX	XXX	–	–	120	220	180	280	–	–	60	32	5	10AF	4AF (10Nm)

New products – Thread machining

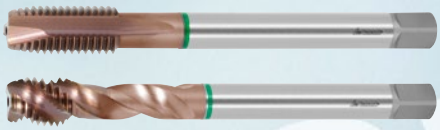
new

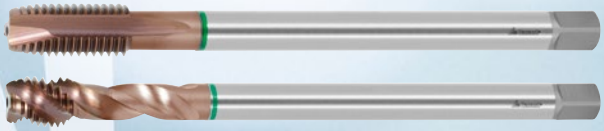
We use this symbol to tag new items in our catalogue range

Group 13

Page **229**
HOLEX tap bit

Page **242 / 258 / 259 / 270 / 282 / 284 / 285**
GARANT Master Tap INOX for threads M / MF extra long / M-6GX / UNC / UNF for blind holes and through holes





Page **248 / 254 / 258 / 260 / 273 / 279 / 284 / 286 / 287**
GARANT Master Tap for threads M / MF extra long / MF-LH / UNC / UNF / NPT for blind holes and through holes

Page **294 / 296**
GARANT Master TM for threads M1.5×D / 2.5×D

Page **306 / 307**
GARANT indexable thread mill for large and deep threads

Group 14

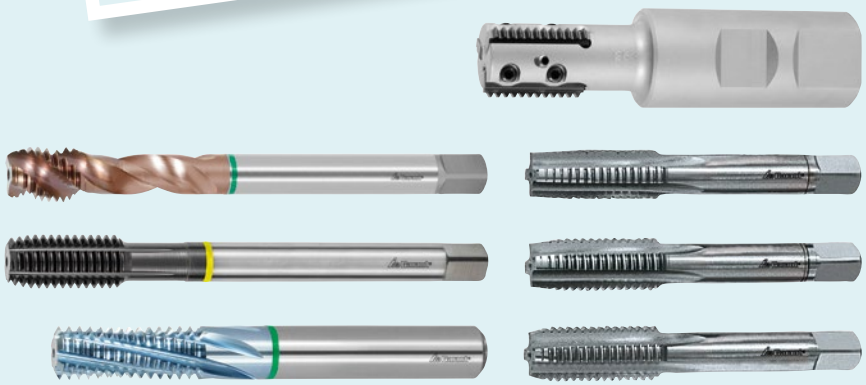
Page **308 / 310**
HOLEX dies for M/MF threads

Page **313 / 314**
GARANT and **HOLEX** cutting sets M-MF

Page **318**
GARANT and **HOLEX** tap and die holding tools

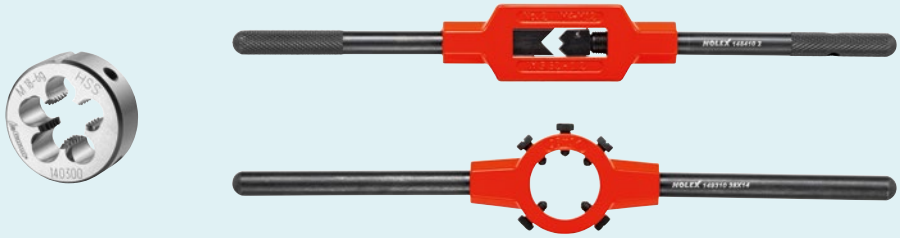
Machining – Threading

Machining/clamping technology for optimal processes.
Now sorted by **application**
drilling, tapping, milling, turning and clamping.



Taps,
fluteless taps,
thread milling cutters
Overview
pages 218 – 223

13
218 – 307



Dies,
thread cutting sets,
holders,
holder set

14
308 – 319

Further thread cutting tools in the chapter Turning, page 717 – 732

Garant Overview of taps

Which tap is suitable for your application?

Discover at a glance which tap is suitable for your application.
Whether you are tapping by hand, on a single pillar drilling machine or on your modern machining centre, the range of taps from the Hoffmann Group will always offer you the right tool.

Hand taps

For tapping or cleaning existing threads by hand.
Set of three, consisting of taper, second and plug tap, or set of two, consisting of taper and plug tap.
Mounting in an adjustable **tap wrench** or **toolholder.**

Conventional

For use on conventional machines such as drilling machines, lathes and milling machines. A high degree of self-guidance and a distinct guide thread section are the features of these tools, which permit their use under unstable machine conditions.
Mounting in the **axial tapping head** or **tapping chuck with compensation.**

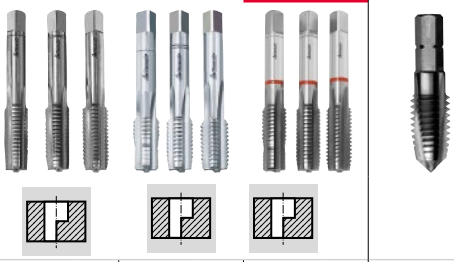
Dynamic

Cost-effective machining for highly demanding work.
High-performance tool materials and modern coatings permit long tool lives and a high degree of process reliability.
Particularly suitable for CNC machines.
Mounting in the **tapping chuck with length compensation** or **minimum length compensation (MLA).**

Synchronous

Very high performance, for use on machines with synchronised spindles.
Reduced self-guiding and a high-performance tool material coating combination permit extremely high cutting speeds combined with very long tool life.
Mounting in the **tapping chuck with minimum length compensation** or **rigid clamping.**

Hand tap sets



		HSS		HSS-E		HSS-E nitrided		HSS vaporised	
Colour ring									
Application									
Tool material		HSS		HSS-E		HSS-E		HSS	
Coating						nitrided		vaporised	
		Product number	Page	Product number	Page	Product number	Page	Product number	Page
M	ISO2/6H	**13 0150**	224	**13 0400**	225	**13 0450**	225	**13 0990**	229
	ISO3/6G								
M-LH	ISO2/6H								
MF	ISO2/6H	**13 0470**	226						
MF-LH	ISO2/6H								
G	DIN228	**13 0550**	226						
BSW	BS84	**13 0670**	227						
UNC	2B	**13 0700**	227						
UNF	2B	**13 0750**	228						
NPT	ANSI B1 20.1								
Rc	EN 10226								
Tr	7H	**13 0760**	228						
Pg	DIN40432								
EG-...	6H mod								

Application									
Tool material									
Coating									
M	ISO2/6H								
M	ISO3/6G								
M-LH	ISO2/6H								
MF	ISO2/6H								
MF-LH	ISO2/6H								
G	DIN228								
G	Aufmaß								
BSW	BS84								
UNC	2B								
UNF	2B								
NPT	ANSI B1 20.1								
Tr	7H								
Pg	DIN40432								
EG-...	6H mod								

Aluminium, plastics	N	○	○	○	●
Steel < 500 N/mm²	P	●			●
Steel < 900 N/mm²	P	●	●		●
Steel < 1400 N/mm²	P		○	●	
Steel > 45 HRC	H				
INOX	M		●		○
Ti	S		●		
GG (G)	K	○	○	○	○
CuZn	N	○			○
Graphite, GRP, CRP	N				
UNI		○	○		○

The areas of application are starting points for pre-selection,

● highly suitable; ○ suitable only under restricted conditions

Conventional

HSS-E		HSS-E / PM		HSS / HSS-E			HSS-E / -PM TiN	
Product number	Page	Product number	Page	Product number	Page		Product number	Page
		13 1150	231					
		13 1200	231					
		13 1280	232					
13 1450	233	13 1290	232	13 1760	231		131250	231
		13 1650	233	13 1800	235			
		13 1700	234					
		13 1850	235					
		13 1300	232					
		13 1350	232					
		13 2830	250				13 2835	250
		13 3010	254					
		13 3300	255					
		13 3350	257					
		13 3400	259					
13 8120	287							
		13 3450	260					

HSS-E		HSS-E / PM		HSS-E		HSS-E vaporised		HSS-E TiN	
Product number	Page	Product number	Page	Product number	Page	Product number	Page	Product number	Page
						13 4851	265		
13 4650	265	13 4600	264	13 4660	264	13 4980	265	13 5100	265
		13 4620	264			13 5150	266		
		13 6250	275			13 6260	276		
						13 7350	281		
						13 7360	281		
		13 7860	283						
		13 8000	285						

Dynamic

HSS-E vaporised		HSS-E-PM Hard chrome		Carbide	
product number	Page	Product number	Page	Product number	Page
13 1100	229	13 1120	229	13 1140	230

HSS-E		HSS-E vaporised		HSS-E-PM Hard chrome		HSS-E-PM TiAlN	
Product number	Page	Product number	Page	Product number	Page	Product number	Page
134200	262	134250	262	134270	262	134655	262
		13 6210	275				
				13 7340	280		

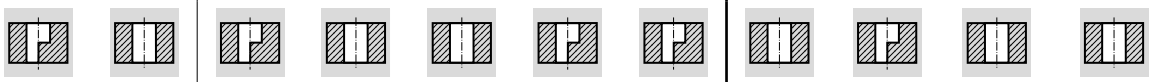
○	○	○	○	○	●	●	●	●	●
●	●	●	●	●		●	○	○	○
●	●	○	●	●					
	○		○	○					
	○								
○		○	○	○					
○	○		○	○		○	○	○	○
	○								●
	○	○		○					

Garant Overview of taps

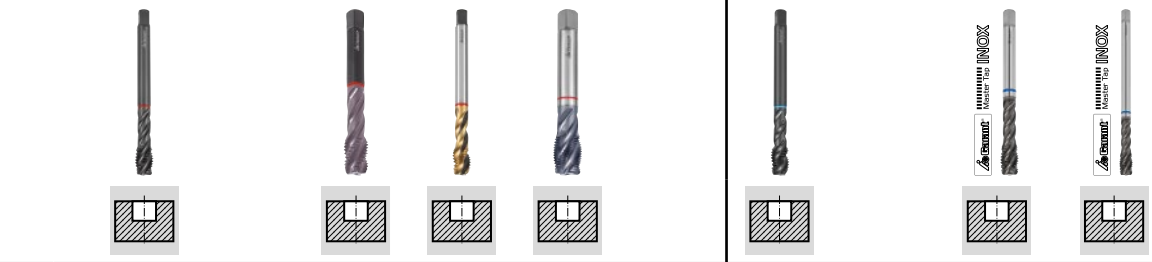
Dynamic

Colour ring

Application



Tool material		HSS-E		HSS-E		HSS-E		HSS-E		HSS-E-PM		HSS-E-PM		Solid carbide		HSS-E		HSS-E		HSS-E-PM		HSS-E-PM	
Coating				nitrided + vaporised		TiN		TiCN		TiN		TiCN		TiAlN		vaporised		TiAlN		TiAlN		TiAlN	
		Product number	Page	Product number	Page	Product number	Page	Product number	Page	Product number	Page	Product number	Page	Product number	Page	Product number	Page	Product number	Page	Product number	Page	Product number	Page
M	ISO2/6H	**13 1900** **13 1950**	236 237	**13 1920**	236	**13 2050**	237	**13 1930**	236	**13 1935**	236	**13 2055**	237	**13 2080**	239	**13 2150** **13 2155**	239 239			**13 2180** **13 2190**	242 242	**13 2195**	242
	ISO3/6G																			**13 2193**	242		
M-LH	ISO2/6H																						
MF	ISO2/6H							**13 2860**	251			**13 2861**	251	**13 2862**	251	**13 2870**	252			**13 2875**	252		
MF-LH	ISO2/6H																						
G	DIN228							**13 3310**	255			**13 3315**	255	**13 3320**	256	**13 3325**	256			**13 3327**	256		
BSW	BS84																						
UNC	2B																			**13 3356**	258		
UNF	2B																			**13 3406**	259		
NPT	ANSI B1 20.1																	**13 8110**	286				
Rc	EN 10226																						
Tr	7H																						
Pg	DIN40432																						
EG-...	6H mod																						



Application

Tool material								HSS-E		HSS-E-PM		HSS-E-PM				HSS-E				HSS-E-PM		HSS-E-PM	
Coating				vaporised				TiCN		TiN		TiCN / TiAlN				vaporised				TiAlN		TiAlN	
				Product number	Page			Product number	Page	Product number	Page	Product number	Page			Product number	Page			Product number	Page	Product number	Page
M	ISO2/6H			**13 5300**	266			**13 5320** **13 5370**	266 266	**13 5375** **13 5378**	267 267					**13 5450** **13 5550** **13 5650**	269 269 269			**13 5732** **13 5734** **13 5736**	270 270 270	**13 5779**	270
M	ISO3/6G															**13 5600**	269			**13 5737**	270		
M-LH	ISO2/6H																						
MF	ISO2/6H							**13 6270**	276	**13 6290**	276					**13 7050**	277			**13 7053**	277		
MF-LH	ISO2/6H																						
G	DIN228											**13 7410**	281			**13 7450**	282			**13 7750**	282		
G	Oversize																			**13 7752**	282		
BSW	BS84																						
UNC	2B																			**13 7857**	284		
UNF	2B																			**13 8007**	285		
NPT	ANSI B1 20.1											**13 8100**	286										
Tr	7H																						
Pg	DIN40432																						
EC-...	6H mod																						

Aluminium, plastics	N															○		○		○		○	
Steel < 500 N/mm²	P			○				○								●		●		○		○	
Steel < 900 N/mm²	P	○		●		●		●								○		●		○		○	
Steel < 1400 N/mm²	P	●		●		●		●		●		●											
Steel > 45 HRC	H	○								●		●		●									
INOX	M									●						●		○		●		●	
Ti	S																						
GG (G)	K																	○					
CuZn	N									○						○		○		○		○	
Graphite, GRP, CRP	N																						
UNI																○		○		●		●	

● highly suitable; ○ suitable only under restricted conditions

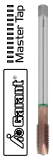
The areas of application are starting points for pre-selection,

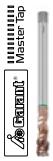
HSS-E-PM nitrided + vaporised		HSS-E-PM		HSS-E TiCN		HSS-E		HSS-E nitrided		HSS-E TiCN		HSS-E-PM DLC		Carbide		HSS-E nitrided + vaporised		HSS-E-PM vaporised		HSS-E-PM TiCN	
Product number	Page	Product number	Page	Product number	Page	Product number	Page	Product number	Page	Product number	Page	Product number	Page	Product number	Page	Product number	Page	Product number	Page	Product number	Page
13 2420	244	**132400**	243	**132450**	244	**132600**	246	**13 2500**	244	**13 2550**	244	**13 2610**	246	**13 2570**	245	**13 2640**	247	**13 1765**	247		
																13 2800	249				
								13 2880	253												
																				13 3550	261

HSS-E-PM nitrided + vaporised		HSS-E-PM TiCN		HSS-E vaporised		HSS-E-PM vaporised		HSS-E-PM TiCN / TiAlN	
Product number	Page	Product number	Page	Product number	Page	Product number	Page	Product number	Page
13 5750	271	**13 5760**	271	**13 5850** **13 6050**	272 272	**13 4670**	272		
				13 6180	274				
13 7055	278								
								13 8200	288

○		○		○												○		○		○	
				●												●		●		●	
○		○		○												●		●		●	
●		●		●												○		○		○	
				●												○		●		○	
●		●		●																	
						○		●		●				●							
				○		●						●		●		○		○		●	
																●		●		●	

Garant® Overview of taps

		Dynamic				Synchronous taps									
Colour ring															
															
Application															
Tool material		HSS-E-PM		HSS-E-PM		HSS-E-PM		HSS-E-PM		HSS-E-PM		HSS-E-PM		HSS-E-PM	
Coating		AlTiX		AlTiX		DLC		TiAlN		TiAlN		TiAlN		TiAlN	
		Product number	Page	Product number	Page	Product number	Page	Product number	Page	Product number	Page	Product number	Page	Product number	Page
M	ISO2/6H	**13 2721** **13 2723**	248 248	**13 1770**	248	**13 1125** **13 1128**	230 230	**13 2065** **13 2070**	238 238	**13 2280** **13 2285**	243 243	**13 2555** **13 2560** **13 2565**	245 245 245	**13 2741** **13 2745**	249 249
	ISO3/6G	**13 2724**	248												
M-LH	ISO2/6H	**13 2805**	249												
MF	ISO2/6H	**13 2905**	253											**13 2950** **13 2955**	254 254
MF-LH	ISO2/6H	**13 3015**	254												
G	DIN228	**13 3330**	257												
BSW	BS84														
UNC	2B	**13 3360**	258												
UNF	2B	**13 3410**	260												
NPT	ANSI B1 20.1														
Rc	EN 10226														
Tr	7H													**13 3490**	261
Pg	DIN40432														
EG-...	6H mod														

															
Application															
Tool material		HSS-E-PM		HSS-E-PM		HSS-E-PM		HSS-E-PM		HSS-E-PM				HSS-E-PM	
Coating		AlTiX		AlTiX		DLC		TiAlN		TiAlN				TiAlN	
		Product number	Page	Product number	Page	Product number	Page	Product number	Page	Product number	Page			Product number	Page
M	ISO2/6H ISO3/6G	**13 5960** **13 5965** **13 6152**	273 273 273	**13 4680**	273	**13 4275** **13 4280** **13 4285**	263 263 263	**13 5410** **13 5415** **13 5420**	268 268 268	**13 5740** **13 5743** **13 5746**	271 271 271			**13 6171** **13 6173** **13 6176**	274 274 274
		13 6158	273												
M-LH	ISO2/6H	**13 6190**	274												
MF	ISO2/6H	**13 7160**	278											**13 7180** **13 7183** **13 7186**	279 279 279
MF-LH	ISO2/6H	**13 7190**	279												
G	DIN228	**13 7805**	282			**13 7344** **13 7345** **13 7346**	280 280 280							**13 7810** **13 7813** **13 7816**	283 283 283
BSW	BS84														
UNC	2B	**13 7870**	284												
UNF	2B	**13 8010**	286												
NPT	ANSI B1 20.1	**13 8105**	287												
Rc	EN 10226														
Tr	7H														
Pg	DIN40432														
EG-...	6H mod														

Aluminium, plastics	N	●	●	●		○		○	
Steel < 500 N/mm²	P	●	●		●	●		●	
Steel < 900 N/mm²	P	●	●		●	●		●	
Steel < 1400 N/mm²	P	●	●		●			●	
Steel > 45 HRC	H				●				
INOX	M	●	●			●		●	
Ti	S								
GG (G)	K	●	●				●	●	
CuZn	N	●	●	●		○		●	
Graphite, GRP, CRP	N			○					
UNI		●	●			○		●	

● highly suitable; ○ suitable only under restricted conditions

The areas of application are starting points for pre-selection,

Garant® Overview fluteless taps / thread milling cutters

		Fluteless taps						Synchronous fluteless taps			
Colour ring											
Application											
Tool material		HSS-E-PM		HSS-E-PM		HSS-E-PM		Solid carbide		HSS-E-PM	
Coating		TiAlN		TiN		TiN		TiAlN		TiN	
		Product number	Page	Product number	Page	Product number	Page	Product number	Page	Product number	Page
M	ISO2/6H	13 9171	290	13 9115 13 9175	289 290	13 9125 13 9178 13 9185 13 9187	289 290 290 290	13 4242 13 9243 13 9244	291 291 291	13 9210 13 9215 13 9230	291 291 291
	ISO3/6G					13 9135 13 9190	289 290				
MF	ISO2/6H			13 9260	292	13 9265	292				
G	DIN228	13 9395	292	13 9400	292	13 9405	292				

Aluminium, plastics	N	●		○	●	●
Steel < 500 N/mm²	P	●	●	●	●	●
Steel < 900 N/mm²	P		●	●	●	●
Steel < 1400 N/mm²	P			○	●	○
Steel > 45 HRC	H					
INOX	M		●	○		○
Ti	S					
GG (G)	K					
CuZn	N		○	○		○
Graphite, GRP, CRP	N					
UNI				●		●

		Combination drill/thread mill		Thread milling cutter				Thread mill with countersinking step			
Colour ring											
Application											
Tool material		Solid carbide		Solid carbide		Solid carbide		Solid carbide		Solid carbide	
Coating		TiAlN		TiAlN		TiAlN		TiAlN		TiAlN	
		Product number	Page	Product number	Page	Product number	Page	Product number	Page	Product number	Page
M / M-LH		13 9510 13 9515	293 293	13 9610 13 9615	293 294	13 9640 13 9641	294 294	13 9652	295	13 9656 13 9653 13 9654	296 296 296
MF / MF-LH						13 9665	297			13 9682 13 9683	298 298
G / G-LH						13 9705	299			13 9715	299
UNC / UNC-LH						13 9722	300			13 9723	300
UNF / UNF-LH						13 9727	301			13 9728	301
NPT						13 9729	302				

Aluminium, plastics	N	●	●	●		●
Steel < 500 N/mm²	P		●	●		●
Steel < 900 N/mm²	P		●	●		●
Steel < 1400 N/mm²	P		●	●	○	●
Steel > 45 HRC	H		●	○	●	○
INOX	M		●	●		●
Ti	S			●		●
GG (G)	K	○		●		●
CuZn	N	●	○	●		●
Graphite, GRP, CRP	N		●			
UNI			●	●		●

for detailed cutting data see the individual products

Micro-lubrication system, patented

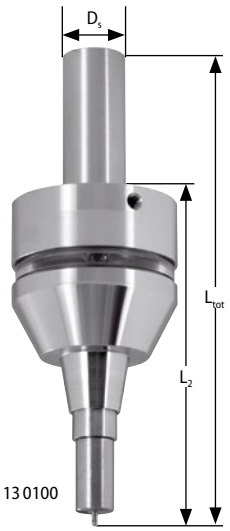
Sturdy stainless steel body with **3-chamber pressure system** for dispensing the lubricant very accurately.

Advantage:
- Very easy to operate.
- No problematic, inaccurate manual lubrication.
- Process reliability and longer tool life.

Application: **Can be used horizontally and vertically in machining centres**. For all thread cutting oils up to 570 mm²/s viscosity (see No. 084210 and 084220). The oil is precisely distributed mechanically and hydraulically on to the tapping hole wall. Because the **micro lubrication system** efficiently uses only very small **quantities of oil,** an impairment of the consistency of the emulsion is prevented. It thus saves the significant expense of changing over to emulsion with a high fat content, which is essential for process reliability when tapping.

Supplied with: Micro lubrication system, main cylinder type S, and one each nozzle type DL and GL filling injector.

Note:
- For accessories and spare parts see the spare parts list.
- For other quick-change tapping heads with minimum quantity lubrication system (for machine taps with internal coolant supply) see No. 338055 / 8056 / 8060 plus accessories.



Type		S
11F 13 0100	Micro-lubrication system	XXX
Overall length L_{tot}	mm	150
Length of body with nozzle L_2	mm	100
Shank ∅ D_s (-0.02 / -0.05 mm)	mm	20

M | 60° | HSS | DIN 352 | DIN 13 | h9 | ≤3×D

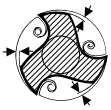
ISO 1 4H ≤ M1.4 | ISO 2 6H ≥ M1.6

3-piece set

Hand tap sets

13 0150–0180 – Size M2.3 and M2.6 to old DIN profile.

13 0150/0200 – Set of three, **consisting of taper, second, and plug tap.**

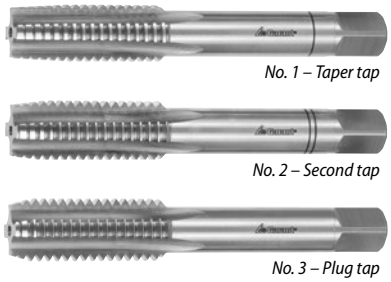


Flanks relief ground.

A | 6 — *No. 1 – Taper tap*

D | 4 — *No. 2 – Second tap*

C | 3 — *No. 3 – Plug tap*



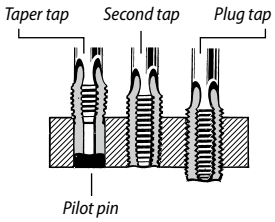
Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	K						
13 0150–13 0200	○	○	○	●	●	●											○	○	●			○	

M	11G 13 0150	11G 13 0160	11G 13 0170	11G 13 0180	12G 13 0200					
	Hand tap set	Hand tap, single			Hand tap set					
		Taper tap	Second tap	Plug tap						
						mm	mm	mm	mm	mm
M1	XXX	–	–	–	–	0.25	80	2.5	2.1	0.75
M1,2	XXX	–	–	–	–	0.25	25	2.5	2.1	0.95
M1,4	XXX	–	–	–	–	0.3	28	2.5	2.1	1.1
M1,6	XXX	–	–	–	–	0.35	32	2.5	2.1	1.25
M2	XXX	XXX	XXX	XXX	–	0.4	32	2.8	2.1	1.6
M2,2	XXX	–	–	–	–	0.45	32	2.8	2.1	1.75
M2,3	XXX	–	–	–	–	0.4	32	2.8	2.1	1.9
M2,5	XXX	XXX	XXX	XXX	–	0.45	36	2.8	2.1	2.05
M2,6	XXX	XXX	XXX	XXX	–	0.45	36	2.8	2.1	2.1
M3	XXX	XXX	XXX	XXX	XXX	0.5	36	3.5	2.7	2.5
M3,5	XXX	XXX	XXX	XXX	–	0.6	40	4	3	2.9
M4	XXX	XXX	XXX	XXX	XXX	0.7	40	4.5	3.4	3.3
M4,5	XXX	–	–	–	–	0.75	45	6	4.9	3.7
M5	XXX	XXX	XXX	XXX	XXX	0.8	45	6	4.9	4.2
M6	XXX	XXX	XXX	XXX	XXX	1	50	6	4.9	5
M7	XXX	–	–	–	–	1	50	6	4.9	6
M8	XXX	XXX	XXX	XXX	XXX	1.25	56	6	4.9	6.8
M9	XXX	–	–	–	–	1.25	56	7	5.5	7.8
M10	XXX	XXX	XXX	XXX	XXX	1.5	63	7	5.5	8.5
M12	XXX	XXX	XXX	XXX	XXX	1.75	70	9	7	10.2
M14	XXX	XXX	XXX	XXX	XXX	2	70	11	9	12
M16	XXX	XXX	XXX	XXX	XXX	2	70	12	9	14
M18	XXX	XXX	XXX	–	XXX	2.5	80	14	11	15.5
M20	XXX	XXX	XXX	XXX	XXX	2.5	95	16	12	17.5
M22	XXX	XXX	XXX	XXX	–	2.5	100	18	14.5	19.5
M24	XXX	XXX	XXX	XXX	–	3	110	18	14.5	21
M27	XXX	XXX	XXX	XXX	–	3	110	20	16	24
M30	XXX	XXX	XXX	XXX	–	3.5	125	22	18	26.5

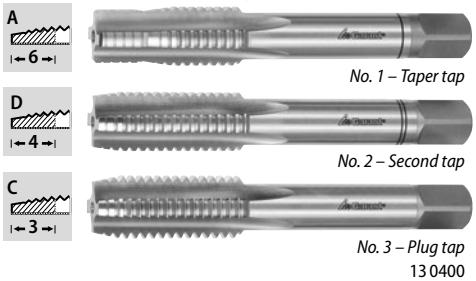
M | 60° | HSS E | DIN 352 | DIN 13 | ISO 2 6H | h9 | ≤3×D

Hand tap sets

3-piece set, **consisting of taper, second, and plug tap.**
Taper tap with long pilot.



3-piece set



No. 1 – Taper tap
No. 2 – Second tap
No. 3 – Plug tap
13 0400

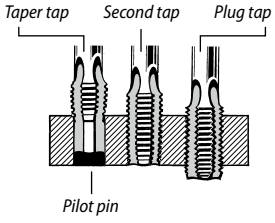
Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	Uni
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	K	
13 0400 – 13 0430			○		●	●	○							●	○	●	○	○

M	11G 13 0400	11G 13 0410	11G 13 0420	11G 13 0430		L_{tot}			
	Hand tap set	Hand tap, single							
		Taper tap	Second tap	Plug tap	mm	mm	mm	mm	mm
M2	XXX	–	–	–	0.4	36	2.8	2.1	1.6
M2,5	XXX	–	–	–	0.45	40	2.8	2.1	2.05
M3	XXX	XXX	XXX	XXX	0.5	40	3.5	2.7	2.5
M3,5	XXX	–	–	–	0.6	45	4	3	2.9
M4	XXX	XXX	XXX	XXX	0.7	45	4.5	3.4	3.3
M5	XXX	XXX	XXX	XXX	0.8	50	6	4.9	4.2
M6	XXX	XXX	XXX	XXX	1	50	6	4.9	5
M8	XXX	XXX	XXX	XXX	1.25	56	6	4.9	6.8
M10	XXX	XXX	XXX	XXX	1.5	70	7	5.5	8.5
M12	XXX	XXX	XXX	XXX	1.75	75	9	7	10.2
M16	XXX	XXX	XXX	XXX	2	80	12	9	14
M20	XXX	XXX	XXX	XXX	2.5	95	16	12	17.5
M22	XXX	XXX	XXX	XXX	2.5	100	18	14.5	19.5
M24	XXX	XXX	XXX	XXX	3	110	18	14.5	21
M27	XXX	XXX	XXX	XXX	3	110	20	16	24
M30	XXX	XXX	XXX	XXX	3.5	125	22	18	26.5

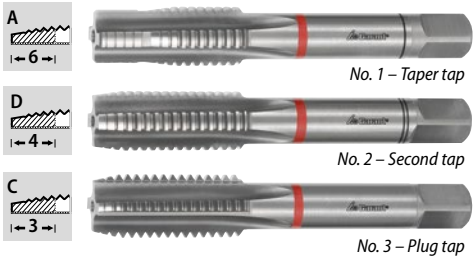
M | 60° | HSS E | DIN 352 | DIN 13 | ISO 2X 6HX | A 6 | C 3 | D 4 | h9 | ≤3×D

Hand tap sets

Set of three, **consisting of taper, second, and plug tap.**
Taper tap with long pilot.
Surface nitrided, more resistant to wear.
Recommendation: For **TOOLOX materials** we recommend **deviating from the DIN** data (see table) by drilling the tapping hole **0.05** to **0.3 mm** larger.



3-piece set



No. 1 – Taper tap
No. 2 – Second tap
No. 3 – Plug tap
13 0450

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	TOOLOX® 33 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	H	M	M	S	K
13 0450			○				●	●						●				○

M	11G 13 0450		L_{tot}			
	Hand tap set					
	nitrided	mm	mm	mm	mm	mm
M2	XXX	0.4	36	2.8	2.1	1.6
M2,5	XXX	0.45	40	2.8	2.1	2.05
M3	XXX	0.5	40	3.5	2.7	2.5
M4	XXX	0.7	45	4.5	3.4	3.3
M5	XXX	0.8	50	6	4.9	4.2
M6	XXX	1	50	6	4.9	5
M8	XXX	1.25	56	6	4.9	6.8
M10	XXX	1.5	70	7	5.5	8.5
M12	XXX	1.75	75	9	7	10.2
M14	XXX	2	80	11	9	12
M16	XXX	2	80	12	9	14
M20	XXX	2.5	95	16	12	17.5

MF | 60° | HSS | DIN 2181 | DIN 13 | C ⟷3⟷ | D ⟷4⟷ | h9 | ≤3×D

ISO 1 4H | ISO 2 6H

2 × 0,25 | ≥ 3 × 0,35

2-piece set

Hand tap sets

2–piece set **comprising taper and plug tap.**
Thread ground with radial thread relief.

D ⟷4⟷

No. 1 – Taper tap

C ⟷3⟷

No. 2 – Plug tap

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	K						
13 0470/0480	○	○	○	●	●	●											○	○	●			○	

M× pitch	11G 13 0470 Garant® Hand tap set	12G 13 0480 HOLEX® Hand tap set	L_{tot} mm	mm	mm	mm
2×0,25	XXX	–	36	2.8	2.1	1.75
3×0,35	XXX	–	40	3.5	2.7	2.65
4×0,35	XXX	–	45	4.5	3.4	3.65
4×0,5	XXX	–	45	4.5	3.4	3.5
5×0,5	XXX	XXX	50	6	4.9	4.5
6×0,5	XXX	–	50	6	4.9	5.5
6×0,75	XXX	XXX	50	6	4.9	5.2
7×0,75	XXX	–	50	6	4.9	6.2
8×0,5	XXX	–	50	6	4.9	7.5
8×0,75	XXX	XXX	50	6	4.9	7.2
8×1	XXX	XXX	56	6	4.9	7
9×1	XXX	–	63	7	5.5	8
10×0,75	XXX	–	63	7	5.5	9.2
10×1	XXX	XXX	63	7	5.5	9
10×1,25	XXX	–	70	7	5.5	8.8
11×1	XXX	–	63	8	6.2	10
12×1	XXX	XXX	70	9	7	11
12×1,25	XXX	XXX	70	9	7	10.8
12×1,5	XXX	XXX	70	9	7	10.5
14×1	XXX	–	70	11	9	13
14×1,25	XXX	–	70	11	9	12.8
14×1,5	XXX	XXX	70	11	9	12.5

M× pitch	11G 13 0470 Garant® Hand tap set	12G 13 0480 HOLEX® Hand tap set	L_{tot} mm	mm	mm	mm
15×1	XXX	–	70	12	9	14
15×1,5	XXX	–	70	12	9	13.5
16×1	XXX	–	70	12	9	15
16×1,5	XXX	XXX	70	12	9	14.5
18×1	XXX	–	80	14	11	17
18×1,5	XXX	XXX	80	14	11	16.5
18×2	XXX	–	80	14	11	16
20×1	XXX	–	80	16	12	19
20×1,5	XXX	XXX	80	16	12	18.5
20×2	XXX	–	80	16	12	18
22×1	XXX	–	80	18	14.5	21
22×1,5	XXX	–	80	18	14.5	20.5
24×1,5	XXX	–	90	18	14.5	22.5
24×2	XXX	–	90	18	14.5	22
25×1,5	XXX	–	90	18	14.5	23.5
26×1,5	XXX	–	90	18	14.5	24.5
27×1,5	XXX	–	90	20	16	25.5
27×2	XXX	–	90	20	16	25
30×1,5	XXX	–	90	22	18	28.5
30×2	XXX	–	90	22	18	28
32×1,5	XXX	–	90	22	18	30.5

G | 55° | HSS | DIN 5157 | h9 | ≤3×D

2-piece set

Hand tap sets

13 0550/0650 – 2-piece set **comprising taper and plug tap.**

Application: **For Whitworth parallel pipe threads** DIN-ISO 228/1
(threads that do not form a seal within the connection).

D ⟷4⟷

No. 1 – Taper tap

C ⟷3⟷

No. 2 – Plug tap

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	K						
13 0550–13 0650	○	○	○	●	●	●											○	○	●			○	

inch	11G 13 0550 Garant® Hand tap set	11G 13 0560 Hand tap **Plug tap**	12G 13 0650 HOLEX® Hand tap set	Threads per inch	Thread ∅ mm	L_{tot} mm	mm	mm	mm
G1/8	XXX	XXX	XXX	28	9.73	63	7	5.5	8.8
G1/4	XXX	XXX	XXX	19	13.16	70	11	9	11.8
G3/8	XXX	XXX	XXX	19	16.66	70	12	9	15.25
G1/2	XXX	XXX	XXX	14	20.96	80	16	12	19
G5/8	XXX	–	–	14	22.91	80	18	14.5	21
G3/4	XXX	XXX	XXX	14	26.44	90	20	16	24.5
G1	XXX	XXX	XXX	11	33.25	100	25	20	30.75
G1.1/4	XXX	–	–	11	41.91	125	32	24	39.5
G1.1/2	XXX	–	–	11	47.8	140	36	29	45.25
G2	XXX	–	–	11	59.61	160	45	35	57

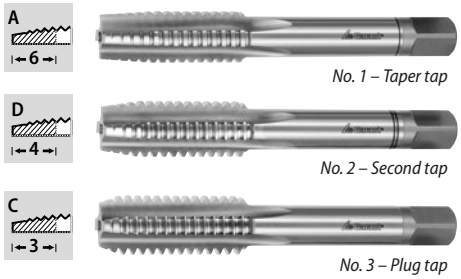
BSW | 55° | HSS | DIN 351 | ≤3×D | h9

Hand tap sets

3-piece set

Set of three, **consisting of taper, second and plug tap.**

Application: **For Whitworth threads** to BSW standard BS84 in the tolerance field "medium".



Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	Uni				
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	K					
13 0670	○	○	○	●	●	●											○	○	●			○

inch	11G	13 0670 Hand tap set	Threads per inch	Thread ∅ mm	L_{tot} mm	mm	mm	mm
W1/8		XXX	40	3.18	40	3.5	2.7	2.5
W5/32		XXX	32	3.97	45	4.5	3.4	3.1
W3/16		XXX	24	4.76	50	5.5	4.3	3.6
W7/32		XXX	24	5.56	50	6	4.9	4.4
W1/4		XXX	20	6.35	56	6	4.9	5.1
W5/16		XXX	18	7.94	63	6	4.9	6.5
W3/8		XXX	16	9.53	70	7	5.5	7.9
W1/2		XXX	12	12.7	80	9	7	10.5
W5/8		XXX	11	15.88	90	12	9	13.5
W3/4		XXX	10	19.05	105	14	11	16.5
W7/8		XXX	9	22.23	110	18	14.5	19.25
W1		XXX	8	25.4	110	20	16	22

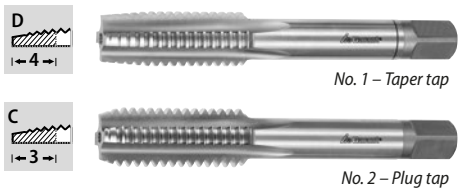
UNC | 60° | HSS | DIN 351 | 2B | ≤3×D | h9

Hand tap sets

2-piece set

2-piece set **comprising taper and plug tap.**

Application: **For UNC uniform coarse threads** ASME – B1.1.



Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	Uni				
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	K					
13 0700	○	○	○	●	●	●											○	○	●			○

UNC	11G	13 0700 Hand tap set	Threads per inch	Thread ∅ mm	L_{tot} mm	mm	mm	mm
2-56		XXX	56	2.18	36	2.8	2.1	1.85
3-48		XXX	48	2.52	40	2.8	2.1	2.1
4-40		XXX	40	2.85	40	3.5	2.7	2.35
6-32		XXX	32	3.51	45	4	3	2.85
8-32		XXX	32	4.17	45	4.5	3.4	3.5
10-24		XXX	24	4.83	50	5.5	4.3	3.9
12-24		XXX	24	5.49	50	6	4.9	4.5
1/4-20		XXX	20	6.35	56	6	4.9	5.1
5/16-18		XXX	18	7.94	63	6	4.9	6.6
3/8-16		XXX	16	9.53	70	7	5.5	8
7/16-14		XXX	14	11.11	75	8	6.2	9.4
1/2-13		XXX	13	12.7	80	9	7	10.8
5/8-11		XXX	11	15.88	90	12	9	13.5
3/4-10		XXX	10	19.05	105	14	11	16.5

UNF | 60° | HSS | DIN 2181 | 2B | C ⊢3⊣ | D ⊢4⊣ | h9 | ≤3×D

Hand tap sets

2-piece set **comprising taper and plug tap.**
Application: **For UNF uniform fine threads** ASME – B1.1.

2-piece set

No. 1 – Taper tap

No. 2 – Plug tap

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	K						
13 0750	○	○	○	●	●	●											○	○	●			○	

UNF	11G 13 0750 Hand tap set	Threads per inch	Thread Ø mm	L_{tot} mm	mm	mm	mm
10-32	XXX	32	4.83	50	5.5	4.3	4.1
1/4-28	XXX	28	6.35	50	6	4.9	5.5
5/16-24	XXX	24	7.94	56	6	4.9	6.9
3/8-24	XXX	24	9.53	63	7	5.5	8.5
7/16-20	XXX	20	11.11	63	8	6.2	9.9
1/2-20	XXX	20	12.7	63	9	7	11.5
9/16-18	XXX	18	14.29	70	11	9	12.9
5/8-18	XXX	18	15.88	70	12	9	14.5

TR | 30° | HSS E | Standard | DIN 103 7H | h9 | ≤1.5×D

Trapezoidal hand tap sets

3-piece set, **consisting of taper, second, and plug tap.**
- **Taper tap with long pilot pin**
- **Plug tap tolerance H7**

Note: **Tool unsuitable for reversing out.**

3-piece set

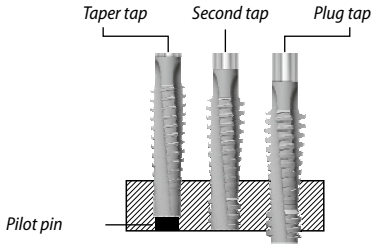
new

No. 1 – Taper tap

No. 2 – Second tap

No. 3 – Plug tap

13 0760



Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	GG(G)	CuZn	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	K	N						
13 0760–13 0790	○	○	○	●	●	●								●	○	○	●	○	●				

Tr	11G 13 0760 Trapezoidal hand tap set	11G 13 0770 Individual trapezoidal hand tap: Taper tap	11G 13 0780 Individual trapezoidal hand tap: Second tap	11G 13 0790 Individual trapezoidal hand tap: Plug tap	mm	L_{tot} mm	mm	mm	mm
TR8×1,5	XXX	XXX	XXX	XXX	1.5	80	6	4.9	6.6
TR10×2	XXX	XXX	XXX	XXX	2	90	7	5.5	8.2
TR10×3	XXX	XXX	XXX	XXX	3	100	7	5.5	7.25
TR12×3	XXX	XXX	XXX	XXX	3	110	8	6.2	9.25
TR14×3	XXX	XXX	XXX	XXX	3	130	10	8	11.25
TR14×4	XXX	XXX	XXX	XXX	4	130	9	7	10.25
TR16×4	XXX	XXX	XXX	XXX	4	140	11	9	12.25
TR18×4	XXX	XXX	XXX	XXX	4	150	12	9	14.25
TR20×4	XXX	XXX	XXX	XXX	4	160	15	12	16.25
TR22×5	XXX	XXX	XXX	XXX	5	180	16	12	17.25
TR24×5	XXX	XXX	XXX	XXX	5	190	18	14.5	19.25

M | HSS | Standard | DIN 13 | ISO 2 6H | 60° | B ↤4↦ | ≤1.5×D

HOLEX

Tap bit with a spiral point

13 0990

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	Graphite GRP CRP	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	N						
13 0990	○	●		●	●	○								○					●				

1/4 inch hexagon shank to DIN 3126 C6.3.

Application: Ideal for repair and assembly work in mobile situations.

M	12H 13 0990 Tap bit vaporised	L_{tot} mm	mm	mm	mm
M3	XXX	32	0.5	9	2.2	2.5
M4	XXX	34	0.7	11	3	3.3
M5	XXX	34	0.8	14	3.9	4.2
M6	XXX	37	1	16	4.5	5
M8	XXX	40	1.25	18	5.9	6.8
M10	XXX	40	1.5	20	7.8	8.5

Tap bit set

for metric threads	M3-10
12K 13 0995 Tap bits set in a sturdy box, 7 pieces	XXX
Content: 1 each tap bit No. 130990	Size M3; M4; M5; M6; M8; M10
1 coupling piece No. 675025	Size 6.3

13 0995

M | 60° | DIN 13 | ISO 2 6H | B ↤4↦ | h9 | ≤3×D

DIN 371 ≤ M10 | DIN 376 ≥ M12

Garant

Through hole machine tap

Strong spiral point.

13 1100 – **Guide section with oil grooves**, but without chip flutes. **Particularly strong, optimal self-guidance** with **no recutting** on reversal.
Sizes M2.3 and M2.6 to the old DIN profile.

Application:

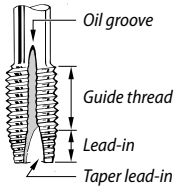
13 1120 – **Hard chrome-plated surface** for reduced edge build-up and increased tool life.

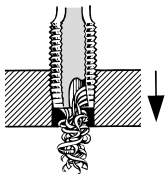
HSS E

13 1100

HSS E-PM

13 1120





The spiral point evacuates the swarf in the direction of cutting.

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	CuZn	Graphite GRP CRP					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	N	N					
13 1100	13	13		15													13		●	●			
13 1120	28	28	23	27													28		●	●			

M	11H 13 1100 HSS-E vaporised	11H 13 1120 HSS-E-PM Hard chrome	L_{tot} mm	mm	mm	mm
M1,6	XXX	–	0.35	40	2.5	2.1	1.25
M2	XXX	XXX	0.4	45	2.8	2.1	1.6
M2,3	XXX	–	0.4	45	2.8	2.1	1.9
M2,5	XXX	–	0.45	50	2.8	2.1	2.05
M2,6	XXX	–	0.45	50	2.8	2.1	2.1
M3	XXX	XXX	0.5	56	3.5	2.7	2.5
M3,5	XXX	–	0.6	56	4	3	2.9
M4	XXX	XXX	0.7	63	4.5	3.4	3.3

M	11H 13 1100 HSS-E vaporised	11H 13 1120 HSS-E-PM Hard chrome	L_{tot} mm	mm	mm	mm
M5	XXX	XXX	0.8	70	6	4.9	4.2
M6	XXX	XXX	1	80	6	4.9	5
M8	XXX	XXX	1.25	90	8	6.2	6.8
M10	XXX	XXX	1.5	100	10	8	8.5
M12	XXX	XXX	1.75	110	9	7	10.2
M16	XXX	XXX	2	110	12	9	14
M20	XXX	XXX	2.5	140	16	12	17.5
M24	XXX	–	3	160	18	14.5	21

M | 60° | HSS E-PM | Standard | DIN 13 | ISO 2X 6HX | B 4 | h6 DIN 1835 B | ≤2.5×D

Garant

Synchronised through hole machine tap with internal coolant supply

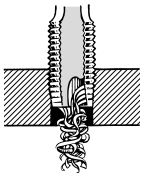
Sturdy design with spiral point and shank to DIN 1835-B. Special geometry for use on machines with **synchronised spindle drives.** Guidance is provided by the synchronising spindle of the machine.
With the latest generation of special **DLC coating sp²** for optimum tool life.
For use with **emulsion** (fat content minimum 8%).

13 1128 – **With internal coolant supply** for maximum tool life.

Note: **For use on synchronised spindles,** the **GARANT** quick-change tapping chuck **No. 338100 – 338121 with minimum length adjustment (MLA)** ensures very high process reliability.

13 1125

13 1128


The spiral point evacuates the swarf in the cutting direction.

Suitable for/ v_c [m/min]	Alu	Alu	Alu cast > 10 % Si	PMMA acrylic	PE-HD	PA 66	PEEK	PF 31	AFRP aramid	PVDF GF20	POM GF25	PA 66 GF30	PEEK GF30	PTFE CF25	Cu	CuZn	GRP	CRP					
ISO code	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N					
13 1125/1128	30	30	25	25					5			15		25	55	35	6	4		●	●		●

M	11H 13 1125	11H 13 1128					
	Machine tap for synchronised spindles						
	HSS-E-PM	HSS-E-PM internal cooling					
	DLC	DLC	mm	mm	mm	mm	mm
M2,5	XXX	–	0.45	70	6	4.9	2.05
M3	XXX	–	0.5	70	6	4.9	2.5
M4	XXX	–	0.7	70	6	4.9	3.3
M5	XXX	XXX	0.8	70	6	4.9	4.2
M6	XXX	XXX	1	80	6	4.9	5
M8	XXX	XXX	1.25	90	8	6.2	6.8
M10	XXX	XXX	1.5	100	10	8	8.5
M12	XXX	XXX	1.75	110	12	9	10.2
M16	XXX	XXX	2	110	12	9	14

M | 60° | Carbide | DIN 13 | ISO 2X 6HX | C 3 | h6 | ≤3×D

DIN 371 ≤ M10 | DIN 376 M12

Garant

Carbide through hole and blind hole machine tap, for GRP/CRP

For use with **emulsion** (fat content minimum 8%).
Size M12 – **Carbide inserts.**
Size M3–M10 – **Solid carbide version.**
Advantage: **Particularly strong, optimal self-guidance.**

13 1140

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	CuZn	Graphite GRP CRP					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	N	N					
13 1140	18	35	28	30													24	10	●	●		●	

M	11H 13 1140					
	Carbide machine tap					
		mm	mm	mm	mm	mm
M3	XXX	0.5	56	3.5	2.7	2.5
M4	XXX	0.7	63	4.5	3.4	3.3
M5	XXX	0.8	70	6	4.9	4.2
M6	XXX	1	80	6	4.9	5
M8	XXX	1.25	90	8	6.2	6.8
M10	XXX	1.5	100	10	8	8.5
M12	XXX	1.75	110	9	7	10.2

M | 60° | DIN 13 | h9

HSS E	HSS	ISO 1 4H	ISO 2 6H
≤ M24	≥ M27	≤ M1.4	≥ M1.6

Through hole machine tap

With spiral point.

13 1150 – Size M2.3 and M2.6 to old DIN profile.

13 1200 – **All sizes:** Shank **to DIN 376(= shank Ø tapered),** thus suitable for greater operating depths
Sizes M2; M2.5; M3 **without square.**

13 1250 – (Form C) 2–3 turns chamfer lead – without spiral point.
Can also be used for blind holes.

With TiN coating for:

- Improved wear properties.
- Lower tendency to edge build-up.
- Higher cutting speeds.

For use with **emulsion** (fat content minimum 8%).

13 1760 – **With extra long shank.**
≤ M10: Shank **to DIN 371;**
≥ M12: Shank **to DIN 376.**

Advantage:

13 1760 – Designed **for tapping threads where access is difficult.**

DIN 371 | B 4 | ≤3×D

13 1150

DIN 376 | B 4 | ≤3×D

13 1200

DIN 371 ≤ M10 | DIN 376 ≥ M12 | C 3 | ≤2×D

13 1250

DIN 371 ≤ M10 | DIN 376 ≥ M12 | B 4 | ≤3×D

13 1260

Standard | B 4 | ≤3×D

13 1760

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	Graphite GRP CRP	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	N						
13 1150/ 1200–13 1760		13		**15**	**15**														●	○			
13 1250		16		**20**	**19**														●	●			

M	13 1150 (11H) Form B DIN 371	13 1200 (11H) Garant Form B DIN 376	13 1250 (11H) Machine tap Form C DIN 371/376 TiN	13 1260 (12H) HOLEX Form B DIN 371/376	13 1760 (11H) Garant Form B extra long		L_{tot} 13 1150 13 1200 13 1250 13 1260	L_{tot} 13 1760	13 1150 13 1250 13 1260 13 1760	13 1200	13 1150 13 1250 13 1260 13 1760	13 1200	
						mm	mm	mm	mm	mm	mm	mm	mm
M1	XXX	–	–	–	–	0.25	40	–	2.5	–	2.1	–	0.75
M1,2	XXX	–	–	–	–	0.25	40	–	2.5	–	2.1	–	0.95
M1,4	XXX	–	–	–	–	0.3	40	–	2.5	–	2.1	–	1.1
M1,6	XXX	–	–	–	–	0.35	40	–	2.5	–	2.1	–	1.25
M1,7	XXX	–	–	–	–	0.35	40	–	2.5	–	2.1	–	1.3
M1,8	XXX	–	–	–	–	0.35	40	–	2.5	–	2.1	–	1.45
M2	XXX	XXX	–	–	–	0.4	45	–	2.8	1.4	2.1	–	1.6
M2,2	XXX	–	–	–	–	0.45	45	–	2.8	–	2.1	–	1.75
M2,3	XXX	–	–	–	–	0.4	45	–	2.8	–	2.1	–	1.9
M2,5	XXX	XXX	–	–	–	0.45	50	–	2.8	1.8	2.1	–	2.05
M2,6	XXX	–	–	–	–	0.45	50	–	2.8	–	2.1	–	2.1
M3	XXX	XXX	XXX	XXX	XXX	0.5	56	112	3.5	2.2	2.7	–	2.5
M3,5	XXX	–	–	–	–	0.6	56	–	4	–	3	–	2.9
M4	XXX	XXX	XXX	XXX	XXX	0.7	63	112	4.5	2.8	3.4	2.1	3.3
M5	XXX	XXX	XXX	XXX	XXX	0.8	70	125	6	3.5	4.9	2.7	4.2
M6	XXX	XXX	XXX	XXX	XXX	1	80	125	6	4.5	4.9	3.4	5
M7	XXX	–	–	–	–	1	80	–	7	–	5.5	–	6
M8	XXX	XXX	XXX	XXX	XXX	1.25	90	140	8	6	6.2	4.9	6.8
M10	XXX	XXX	XXX	XXX	XXX	1.5	100	160	10	7	8	5.5	8.5
M12	–	XXX	XXX	XXX	XXX	1.75	110	180	9	9	7	7	10.2
M14	–	XXX	XXX	–	–	2	110	–	11	11	9	9	12
M16	–	XXX	XXX	XXX	XXX	2	110	220	12	12	9	9	14
M18	–	XXX	–	–	–	2.5	125	–	–	14	–	11	15.5
M20	–	XXX	XXX	XXX	XXX	2.5	140	280	16	16	12	12	17.5
M22	–	XXX	–	–	–	2.5	140	–	–	18	–	14.5	19.5
M24	–	XXX	XXX	XXX	–	3	160	–	18	18	14.5	14.5	21
M27	–	XXX	–	–	–	3	160	–	–	20	–	16	24
M30	–	XXX	XXX	–	–	3.5	180	–	22	22	18	18	26.5
M33	–	XXX	–	–	–	3.5	180	–	–	25	–	20	29.5
M36	–	XXX	XXX	–	–	4	200	–	28	28	22	22	32

M | 60° | HSS E-PM | DIN 13 | ISO 2 6H | h9 | ≤3×D

DIN 371 ≤ M10 | DIN 376 ≥ M12

Garant Through hole machine tap

With spiral point.

13 1290 – (Form CS) 2 – -3 turns chamfer lead – **with spiral point.**

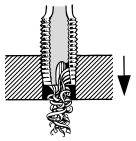
Advantage: Greater wear resistance.

B 4

13 1280

CS 3

13 1290



The spiral point evacuates the swarf in the cutting direction.

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	Graphite GRP CRP	Uni
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	N	
13 1280/1290		15		18	18	18	9											○

M	11H 13 1280 Machine tap HSS-E-PM Form B	11H 13 1290 Machine tap HSS-E-PM Form CS		L_{tot}			
			mm	mm	mm	mm	mm
M3	XXX	XXX	0.5	56	3.5	2.7	2.5
M4	XXX	XXX	0.7	63	4.5	3.4	3.3
M5	XXX	XXX	0.8	70	6	4.9	4.2
M6	XXX	XXX	1	80	6	4.9	5
M8	XXX	XXX	1.25	90	8	6.2	6.8
M10	XXX	XXX	1.5	100	10	8	8.5
M12	XXX	XXX	1.75	110	9	7	10.2
M16	XXX	XXX	2	110	12	9	14
M20	XXX	XXX	2.5	140	16	12	17.5

M | 60° | HSS E | DIN 13 | ISO 3 6G | B 4 | h9 | ≤3×D

Garant Through hole machine tap

DIN 371

13 1300

DIN 376

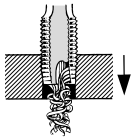
13 1350

With spiral point.

Tolerance class ISO 3 / 6G = oversize 0.02 – 0.04 mm.

13 1350 – **All sizes:** Shank **to DIN 376 (= shank Ø relieved);** thus suitable for greater operating depths.

Application: For components which are **galvanised** after threading or shrink slightly when hardened.



The spiral point evacuates the swarf in the cutting direction.

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	Graphite GRP CRP	Uni
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	N	
13 1300/1350		13		15	15													●

M	11H 13 1300 Machine tap 6G DIN 371	11H 13 1350 Machine tap 6G DIN 376		L_{tot}	13 1300	13 1350	13 1300	13 1350	
			mm	mm	mm	mm	mm	mm	mm
M2	XXX	–	0.4	45	2.8	–	2.1	–	1.6
M2,5	XXX	–	0.45	50	2.8	–	2.1	–	2.05
M3	XXX	–	0.5	56	3.5	–	2.7	–	2.5
M3,5	XXX	–	0.6	56	4	–	3	–	2.9
M4	XXX	–	0.7	63	4.5	–	3.4	–	3.3
M5	XXX	–	0.8	70	6	–	4.9	–	4.2
M6	XXX	–	1	80	6	–	4.9	–	5
M8	XXX	XXX	1.25	90	8	6	6.2	4.9	6.8
M10	XXX	XXX	1.5	100	10	7	8	5.5	8.5
M12	–	XXX	1.75	110	–	9	–	7	10.2
M14	–	XXX	2	110	–	11	–	9	12
M16	–	XXX	2	110	–	12	–	9	14
M20	–	XXX	2.5	140	–	16	–	12	17.5

M | 60° | HSS E | DIN 352 | DIN 13 | ISO 2 6H | B 4 | h9 | ≤3×D

Through hole tap stub

With spiral point.

Application: **As hand or machine tap.**

13 1450

13 1600

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	Graphite GRP CRP	Uni
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	N	
13 1450/1600		13		15	15													● ○

M	11H 13 1450 Garant	12H 13 1600 HOLEX	mm	L_{tot} mm	mm	mm	mm
	Spiral point tap **stub**						
M2	XXX	–	0.4	36	2.8	2.1	1.6
M2,5	XXX	–	0.45	40	2.8	2.1	2.05
M3	XXX	XXX	0.5	40	3.5	2.7	2.5
M4	XXX	XXX	0.7	45	4.5	3.4	3.3
M5	XXX	XXX	0.8	50	6	4.9	4.2
M6	XXX	XXX	1	50	6	4.9	5
M8	XXX	XXX	1.25	56	6	4.9	6.8
M10	XXX	XXX	1.5	70	7	5.5	8.5
M12	XXX	XXX	1.75	75	9	7	10.2
M16	XXX	–	2	80	12	9	14

M | 60° | HSS E | DIN 13 | ISO 2 6H | B 4 | h9 | ≤3×D

DIN 371 ≤ M10 | DIN 376 ≥ M12

Garant Through hole machine tap with interrupted thread

Spiral point.

With interrupted thread, this **reduces torque** and **improves distribution of the lubricant.**

Advantage: **Ideally suited for use on resilient materials and thin-walled components.**
Low frictional resistance, thus no material deformation is caused.

13 1650

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	Uni
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	K	
13 1650		13		15	15												9	○ ● ○

M	11H 13 1650	mm	L_{tot} mm	mm	mm	mm
	Machine tap **with interrupted thread**					
M2	XXX	0.4	45	2.8	2.1	1.6
M3	XXX	0.5	56	3.5	2.7	2.5
M4	XXX	0.7	63	4.5	3.4	3.3
M5	XXX	0.8	70	6	4.9	4.2
M6	XXX	1	80	6	4.9	5
M8	XXX	1.25	90	8	6.2	6.8
M10	XXX	1.5	100	10	8	8.5
M12	XXX	1.75	110	9	7	10.2
M16	XXX	2	110	12	9	14
M20	XXX	2.5	140	16	12	17.5

M | 60° | DIN 13 | ISO 2 6H | D ↔4↔ | 15-20° | h9 | ≤3×D

HSS E	HSS	DIN 371	DIN 376
≤ M24	M30	≤ M10	≥ M12

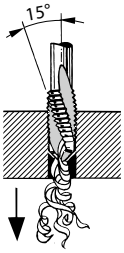
Garant

Through hole machine tap

Sturdy design with 15° left-hand spiral.

Advantage: **Particularly suitable for interrupted cuts** (e.g. longitudinal groove in the hole).

13 1700



The left hand spiral evacuates the swarf in the cutting direction.

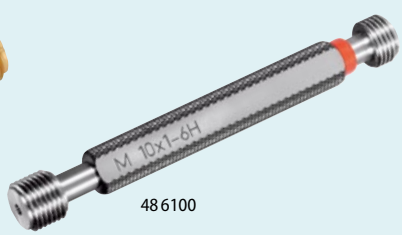
Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	K						
13 1700		13		15	15												9	○	●	○			

M	13 1700 Machine tap	d_1 mm	L_{tot} mm	l_1 mm	d_2 mm	l_2 mm
M2	XXX	0.4	45	2.8	2.1	1.6
M2,5	XXX	0.45	50	2.8	2.1	2.05
M3	XXX	0.5	56	3.5	2.7	2.5
M3,5	XXX	0.6	56	4	3	2.9
M4	XXX	0.7	63	4.5	3.4	3.3
M5	XXX	0.8	70	6	4.9	4.2
M6	XXX	1	80	6	4.9	5
M8	XXX	1.25	90	8	6.2	6.8
M10	XXX	1.5	100	10	8	8.5
M12	XXX	1.75	110	9	7	10.2
M14	XXX	2	110	11	9	12
M16	XXX	2	110	12	9	14
M18	XXX	2.5	125	14	11	15.5
M20	XXX	2.5	140	16	12	17.5
M24	XXX	3	160	18	14.5	21
M30	XXX	3.5	180	22	18	26.5

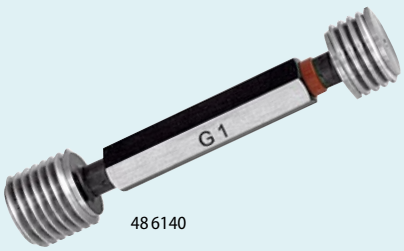
Thread gauges – volume 2

Our comprehensive ex-stock thread gauge range for many different types of threads and all popular sizes can be found in catalogue **Volume 2 – Product Group 48.** Thread gauges for non-standard pitches, for left-hand threads and for other thread forms are available on request.

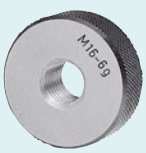
48 6008



48 6100



48 6140



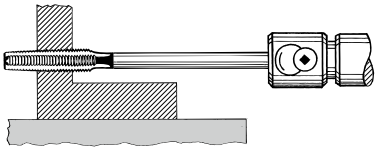
48 6010

M | 60° | HSS | DIN 357 | DIN 13 | ISO 2 6H | A 6 | h9 | ≤2×D

Through hole machine tap long

Long shank (with tapered shank ⌀ for greater operating depths).
Advantage: Particularly suitable **for tapping holes where access is difficult.**

13 1800



Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	Uni
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	K	
13 1800		13		15	15												9	○

M	11H	13 1800 Machine tap long		L_{tot}			
			mm	mm	mm	mm	mm
M2		XXX	0.4	70	1.4	–	1.6
M2,5		XXX	0.45	70	1.8	–	2.05
M3		XXX	0.5	70	2.2	–	2.5
M4		XXX	0.7	90	2.8	2.1	3.3
M5		XXX	0.8	100	3.5	2.7	4.2

M	11H	13 1800 Machine tap long		L_{tot}			
			mm	mm	mm	mm	mm
M6		XXX	1	110	4.5	3.4	5
M8		XXX	1.25	125	6	4.9	6.8
M10		XXX	1.5	140	7	5.5	8.5
M12		XXX	1.75	180	9	7	10.2
M16		XXX	2	200	12	9	14

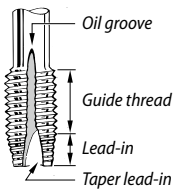
M | 60° | HSS E | DIN 13 | ISO 2 6H | B 4 | h9 | ≤3×D

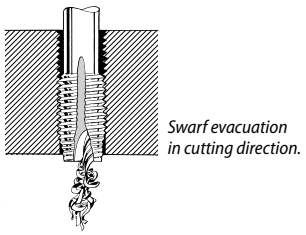
DIN 371 ≤ M10 | DIN 376 ≥ M12

Through hole machine tap

Strong spiral point. Guide section with oil grooves, but without chip flutes.
Advantage: **Particularly strong, optimum self-guidance** and **no recutting** when reversed.

13 1850





Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	GG(G)	CuZn	Uni
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	K	N	
13 1850		13		15	15	15										9	13	○

M	11H	13 1850 Machine tap		L_{tot}			
			mm	mm	mm	mm	mm
M2		XXX	0.4	45	2.8	2.1	1.6
M2,5		XXX	0.45	50	2.8	2.1	2.05
M3		XXX	0.5	56	3.5	2.7	2.5
M3,5		XXX	0.6	56	4	3	2.9
M4		XXX	0.7	63	4.5	3.4	3.3
M5		XXX	0.8	70	6	4.9	4.2

M	11H	13 1850 Machine tap		L_{tot}			
			mm	mm	mm	mm	mm
M6		XXX	1	80	6	4.9	5
M8		XXX	1.25	90	8	6.2	6.8
M10		XXX	1.5	100	10	8	8.5
M12		XXX	1.75	110	9	7	10.2
M16		XXX	2	110	12	9	14
M20		XXX	2.5	140	16	12	17.5

M | 60° | HSS E | DIN 13 | ISO 2 6H | B 4 | h9 | ≤2×D

DIN 371 ≤ M10 | DIN 376 ≥ M12

Garant

Through hole machine tap with interrupted thread

Spiral point.
With interrupted thread, this **reduces torque** and **improves distribution of the lubricant.**

Advantage: **Particularly suitable for thin-walled components.** Low frictional resistance, thus no material deformation is caused.

Recommendation: For **TOOLOX materials** we recommend **deviating from the DIN data** (see table) by drilling the tapping hole ∅ **0.05** to **0.3 mm** larger.

13 1900

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	TOOLOX® 33 HRC	INOX < 900 N	INOX > 900 N	CuZn	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	H	M	M	N						
13 1900		13	**13**	15	15	**15**	**6**							**3**			**13**	○	●	○			

M	11H 13 1900 Machine tap with interrupted thread		L_{tot}			
		mm	mm	mm	mm	mm
M3	XXX	0.5	56	3.5	2.7	2.5
M4	XXX	0.7	63	4.5	3.4	3.3
M5	XXX	0.8	70	6	4.9	4.2
M6	XXX	1	80	6	4.9	5
M8	XXX	1.25	90	8	6.2	6.8
M10	XXX	1.5	100	10	8	8.5
M12	XXX	1.75	110	9	7	10.2
M16	XXX	2	110	12	9	14
M20	XXX	2.5	140	16	12	17.5

M | 60° | DIN 13 | ISO 2X 6HX | B 4 | h9 | ≤3×D

DIN 371 ≤ M10 | DIN 376 ≥ M12

Garant

Through hole machine tap

With spiral point.
13 1935 – For use also in **HARDOX materials (HARDOX ≤ 500)**.
13 1930/1935 – For use with **emulsion** (fat content minimum 8%).

Recommendation:
13 1930/1935 – For **TOOLOX** and **HARDOX materials** we recommend **deviating from the DIN data** (see table) by drilling the tapping hole ∅ **0.05** to **0.3 mm** larger.

HSS E

13 1920

HSS E

13 1930

HSS E-PM

13 1935

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	TOOLOX® 33 HRC	TOOLOX® 44 HRC	HARDOX® 500 < 1600 N	INOX < 900 N	INOX > 900 N	CuZn					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	H	H	M	M	N					
13 1920				15	15	**15**	**6**												●	○			
13 1930				20	19	**19**	**9**						**4**						●	●			
13 1935							**9**	**7**					**7**	**5**	**3**	**9**	**7**	8	●	●			

M	11H 13 1920 HSS-E nitrided and vapor-ised	11H 13 1930 HSS-E TiCN	11H 13 1935 HSS-E-PM TiN		L_{tot}			
				mm	mm	mm	mm	mm
M2	XXX	–	–	0.4	45	2.8	2.1	1.6
M3	XXX	XXX	XXX	0.5	56	3.5	2.7	2.5
M4	XXX	XXX	XXX	0.7	63	4.5	3.4	3.3
M5	XXX	XXX	XXX	0.8	70	6	4.9	4.2
M6	XXX	XXX	XXX	1	80	6	4.9	5
M8	XXX	XXX	XXX	1.25	90	8	6.2	6.8
M10	XXX	XXX	XXX	1.5	100	10	8	8.5
M12	XXX	XXX	XXX	1.75	110	9	7	10.2
M14	XXX	XXX	XXX	2	110	11	9	12
M16	XXX	XXX	XXX	2	110	12	9	14
M20	XXX	XXX	XXX	2.5	140	16	12	17.5
M24	XXX	XXX	–	3	160	18	14.5	21

M | 60° | HSS E | DIN 13 | ISO 2X 6HX | C 3 | h9 | ≤1.5×D

DIN 371 ≤ M10 | DIN 376 ≥ M12

Garant

Through and blind hole machine taps

Sturdy version.

13 2050 – Can be used with **emulsion** (fat content minimum 8 %) with **through-coolant feed.**

Recommendation: For **TOOLOX** and **HARDOX materials** we recommend **deviating from the DIN data** (see table) by drilling the tapping hole ∅ **0.05** to **0.3 mm** larger.

13 1950

13 2050

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	TOOLOX® 33 HRC	TOOLOX® 44 HRC	HARDOX® 500 < 1600 N	INOX < 900 N	INOX > 900 N
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	H	H	H	M	M
13 1950					15	15	6	3						4	3	3		
13 2050					19	19	9	4						4				

M	11H 13 1950	11H 13 2050					
	Machine tap						
		Through-coolant					
		TiN	mm	mm	mm	mm	mm
M2,5	XXX	–	0.45	50	2.8	2.1	2.05
M3	XXX	–	0.5	56	3.5	2.7	2.5
M3,5	XXX	–	0.6	56	4	3	2.9
M4	XXX	–	0.7	63	4.5	3.4	3.3
M5	XXX	–	0.8	70	6	4.9	4.2
M6	XXX	XXX	1	80	6	4.9	5
M8	XXX	XXX	1.25	90	8	6.2	6.8
M10	XXX	XXX	1.5	100	10	8	8.5
M12	XXX	XXX	1.75	110	9	7	10.2
M14	XXX	–	2	110	11	9	12
M16	XXX	XXX	2	110	12	9	14
M20	XXX	–	2.5	140	16	12	17.5

M | 60° | HSS E-PM | DIN 13 | ISO 2X 6HX | C 3 | h9 | ≤1.5×D

DIN 371 ≤ M10 | DIN 376 ≥ M12

Garant

Through and blind hole machine tap

Sturdy version.

Recommendation: For **very hard steels, TOOLOX** and **HARDOX materials** we recommend **deviating from the DIN data** (see table) by drilling the tapping hole ∅ **0.05** to **0.3 mm** larger. For use only with a length compensation chuck – even on machines with synchronised spindle drives.

13 2055

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	TOOLOX® 33 HRC	TOOLOX® 44 HRC	HARDOX® 500 < 1600 N	INOX < 900 N	Graphite GRP CRP
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	H	H	H	M	N
13 2055							12	7	2					4	3	2		15

M	11H 13 2055					
	Machine tap					
	HSS-E-PM					
	TiCN	mm	mm	mm	mm	mm
M4	XXX	0.7	63	4.5	3.4	3.3
M5	XXX	0.8	70	6	4.9	4.2
M6	XXX	1	80	6	4.9	5
M8	XXX	1.25	90	8	6.2	6.8
M10	XXX	1.5	100	10	8	8.5
M12	XXX	1.75	110	9	7	10.2
M16	XXX	2	110	12	9	14
M20	XXX	2.5	140	16	12	17.5

M | 60° | HSS E-PM | Standard | DIN 13 | ISO 2X 6HX | B 4 | h6 DIN 1835 B | ≤2.5×D

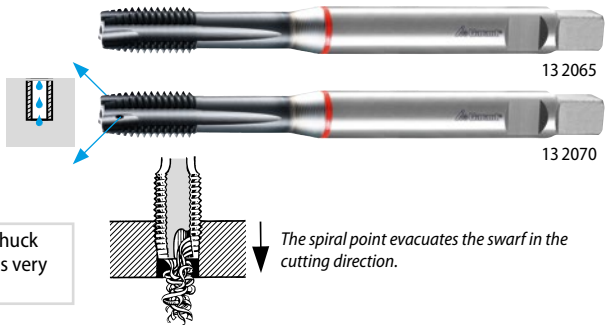
Synchronised through hole machine tap with internal coolant supply

Sturdy design with spiral point and shank to DIN 1835-B.
Special geometry for use on machines with **synchronised spindle drives.**
The tap is controlled by the synchronising spindle of the machine.
Special **TiAlN coating** for optimum tool life.
For use with **emulsion** (fat content minimum 8%).

13 2070 – **With internal coolant supply** for maximum tool life.

Recommendation: For **TOOLOX materials** we recommend **deviating from the DIN data** (see table) by drilling the tapping hole ∅ **0.05** to **0.3 mm** larger.

Note: **For use on synchronised spindles,** the **GARANT** quick-change tapping chuck **No. 338100 – 338121 with minimum length adjustment (MLA)** ensures very high process reliability.



The spiral point evacuates the swarf in the cutting direction.

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	TOOLOX® 33 HRC	TOOLOX® 44 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	H	H	M	M	S					
13 2065/2070				37	35	22	12	7						7	6				●	●	●		

M	11H 13 2065 HSS-E-PM TiAlN	11H 13 2070 HSS-E-PM internal cooling TiAlN		L_{tot}			
	Machine tap for synchronised spindles		mm	mm	mm	mm	mm
M3	XXX	–	0.5	70	6	4.9	2.5
M4	XXX	–	0.7	70	6	4.9	3.3
M5	XXX	XXX	0.8	70	6	4.9	4.2
M6	XXX	XXX	1	80	6	4.9	5
M8	XXX	XXX	1.25	90	8	6.2	6.8
M10	XXX	XXX	1.5	100	10	8	8.5
M12	XXX	XXX	1.75	110	12	9	10.2
M16	XXX	XXX	2	110	12	9	14

Quick-change tapping chuck for synchronised spindles

Outstandingly suitable for use with GARANT synchronous machine taps and fluteless taps **No. 33 8100 – 33 8121** with **M**inimum **L**ength **A**djustment **(MLA).** MLA (length compensation tension 1 mm, compression 0.2 mm) compensates for difference in pitch between the machine tap / fluteless tap and synchronised spindle. This allows the tools to run at higher cutting speeds; the concentricity is significantly increased.

For GARANT synchronous machine taps / fluteless taps this achieves compensation of synchronisation errors, reduction of pressure on the thread flanks and higher axial forces – resulting in higher process reliability and longer tool life. ER collet bodies are very flexible, have a short overall length, high process reliability and a quick-change adapter. Compensation by tension/compression: +0.5 /–0.2.

Quick-change tapping head **MLA**
No. 33 8100
with quick-change insert
No. 33 8120.

Synchronous arbor for the ER collet chuck
No. 33 8180
with synchro tool head
No. 33 8186.

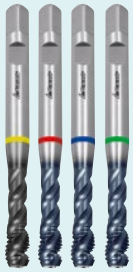
Synchronous machine taps

M	MF
13 1125	13 2950
13 1128 (IC)	13 2955 (IC)
13 2065	
13 2070 (IC)	
13 2280	
13 2285 (IC)	
13 2741	
13 2745 (IC)	

Synchronous machine taps

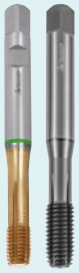
M
13 2555
13 2560 (E)
13 2565 (IC)

Synchronous machine taps



M	MF	G
13 4275	13 7180	13 7344
13 4280 (IC)	13 7183 (E)	13 7345 (E)
13 4285 (IC)	13 7186 (IC)	13 7346 (IC)
13 5290		13 7810
13 5410		13 7813 (E)
13 5415 (E)		13 7816 (IC)
13 5420 (IC)		
13 5740		
13 5743 (E)		
13 5746 (IC)		
13 6171		
13 6173 (E)		
13 6176 (IC)		

Synchronous fluteless taps



M
13 9210
13 9215 (E)
13 9230 (IC)
13 9242
13 9243 (E)
13 9244 (IC)

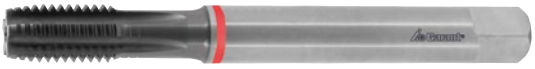
M | 60° | Solid carbide | DIN 371 | DIN 13 | ISO 2X 6HX | D ≈4× | h6 | ≤2×D

Garant Solid carbide machine tap for through and blind holes

Particularly **sturdy version.** For the highest performance demands.

Application: For use only with a length compensation chuck – even on machines with synchronised spindle drives.

Recommendation: For **very hard steels, TOOLOX** and **HARDOX materials** we recommend **deviating from the DIN data** (see table) by drilling the tapping hole ∅ **0.05** to **0.3 mm** larger.



13 2080

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	TOOLOX® 33 HRC	TOOLOX® 44 HRC	HARDOX® 500 < 1600 N	INOX < 900 N	Graphite GRP CRP					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	H	H	H	M	N					
13 2080									3	2	1	1		5	4	3		18	●				

M	11H	13 2080				
		Solid carbide machine tap				
		TiAlN	mm	mm	mm	mm	mm
M3		XXX	0.5	63	4.5	3.4	2.5
M4		XXX	0.7	63	4.5	3.4	3.3
M5		XXX	0.8	70	6	4.9	4.2
M6		XXX	1	80	6	4.9	5
M8		XXX	1.25	90	8	6.2	6.8
M10		XXX	1.5	100	10	8	8.5
M12		XXX	1.75	110	12	9	10.2

M | 60° | HSS E | DIN 13 | ISO 2X 6HX | h9 | ≤3×D

DIN 371 ≤ M10 | DIN 376 ≥ M12

Garant Through hole machine tap for stainless steels

Particularly sturdy design.

13 2150 – **Guide section with oil grooves,** but without chip flutes. **Lead chamfer form B, with strong spiral point.** Size M2.6 to the old DIN profile.

13 2155 – **Taper lead form D with 15° left-hand spiral.**

Advantage:

13 2150 – **Optimum self-guidance** and **no recutting** when reversed.

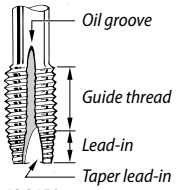
13 2155 – Special geometry enables **higher cutting speeds and long tool life in stainless steel.**

13 2150

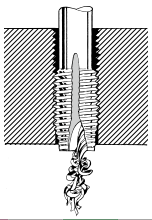
B ≈4×

13 2155

D ≈4× | 15°



13 2150

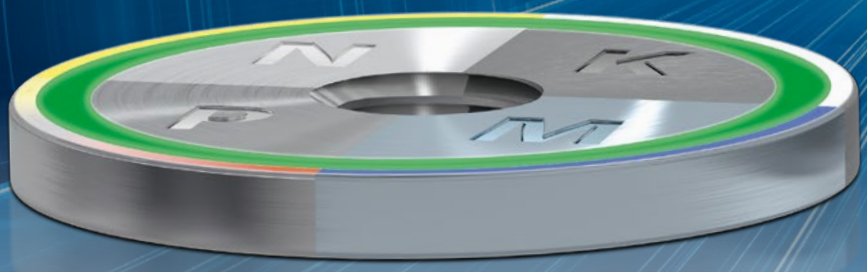


Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	CuZn	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	N						
13 2150		13		**15**	**15**	15								**6**			13	○	●	○			
13 2155		13		**15**	**15**	15								**13**			13	○	●	○			

M	11H	13 2150	11H	13 2155				
		Machine tap						
		Form B		Form D				
		vaporised		vaporised	mm	mm	mm	mm	mm
M2		XXX		–	0.4	45	2.8	2.1	1.6
M2,5		XXX		–	0.45	50	2.8	2.1	2.05
M2,6		XXX		–	0.45	50	2.8	2.1	2.1
M3		XXX		XXX	0.5	56	3.5	2.7	2.5
M4		XXX		XXX	0.7	63	4.5	3.4	3.3
M5		XXX		XXX	0.8	70	6	4.9	4.2
M6		XXX		XXX	1	80	6	4.9	5
M8		XXX		XXX	1.25	90	8	6.2	6.8
M10		XXX		XXX	1.5	100	10	8	8.5
M12		XXX		XXX	1.75	110	9	7	10.2
M14		XXX		–	2	110	11	9	12
M16		XXX		–	2	110	12	9	14
M20		XXX		–	2.5	140	16	12	17.5
M24		XXX		–	3	160	18	14.5	21

Garant® Master Tap

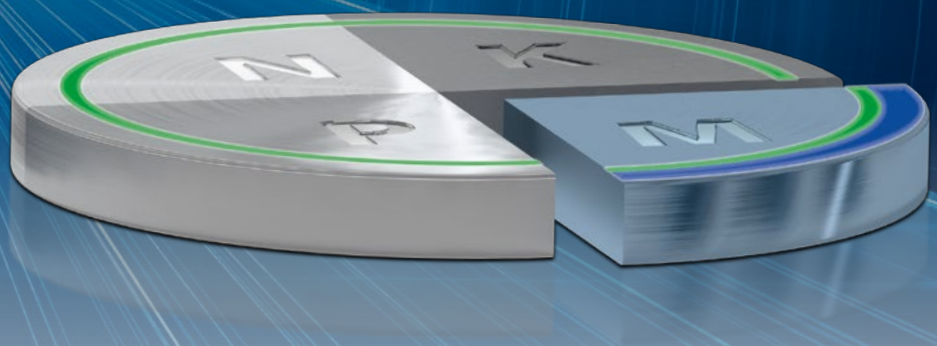
The masters of thread machining.



GARANT Master Tap – the multi-talented one for general-purpose use.

- Special flute geometries ensure optimum chip evacuation.
- Innovative AlTiX coating for significantly reduced cutting forces.
- Very high process reliability in a wide range of materials.
- For use across a wide spectrum of materials, thus reducing the variety of tools that have to be stocked.

Garant® Master Tap INOX



GARANT Master Tap INOX – the specialist for stainless steels.

- Perfectly matched geometry for machining stainless steel.
- Outstandingly suitable for use in critical and difficult materials.
- TiAlN multi-layer coating for optimum wear protection and chip clearance.
- High-quality HSS-E-PM tool material ensures maximum performance.

M | 60° | HSS E-PM | DIN 13 | B 4 | h9 | ≤3×D

GARANT Master Tap INOX through hole machine tap for stainless and acid-resistant steels

High-performance tap, specially developed for **good process reliability in stainless and acid-resistant steels** and **duplex materials.**

- **HSS-E-PM tool material** for maximum wear resistance
- The latest generation of **TiALN multi-layer coating**
- **Parameterised flute geometry** for optimum chip formation and **rigidity**

13 2190 – With internal coolant supply

13 2193 – **Tolerance class: ISO 3X/6GX**. For components which are **galvanised** or shrink slightly when hardened.

13 2195 – **With extra long shank.**

13 2195 Size M3–M10 – Shank to DIN371.

13 2195 Size M12–M24 – Shank to DIN376.

Advantage:

13 2195 – Designed for tapping threads where access is difficult.

13 2180

DIN 371 | DIN 376 | ISO 2X 6HX

≤ M10 ≥ M12

13 2190

DIN 371 | DIN 376 | ISO 2X 6HX

≤ M10 ≥ M12

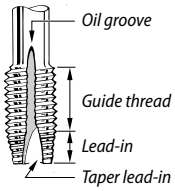
13 2193

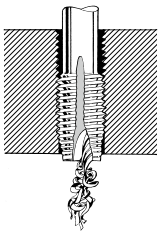
DIN 371 | DIN 376 | ISO 3X 6GX

≤ M10 ≥ M12

13 2195

Standard | ISO 2X 6HX





Chip evacuation in the direction of cutting.

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	Graphite GRP CRP	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	N						
13 2180–13 2193		28			23	23	12							11	9				●	●			
13 2195		20			16	16	8							7	6				●	●			

M	13 2180	13 2190	13 2193	13 2195						
	GARANT Master Tap INOX machine tap									
	HSS-E-PM Form B 6HX	HSS-E-PM IC / Form B 6HX	HSS-E-PM Form B 6GX	extra long HSS-E-PM Form B 6HX						
	TiAlN	TiAlN	TiAlN	TiAlN	mm	mm	mm	mm	mm	mm
M1,6	XXX	–	–	–	0.35	40	–	2.5	2.1	1.25
M2	XXX	–	XXX	–	0.4	45	–	2.8	2.1	1.6
M2,5	XXX	–	–	–	0.45	50	–	2.8	2.1	2.05
M2,6	XXX	–	–	–	0.45	50	–	2.8	2.1	2.1
M3	XXX	–	XXX	XXX	0.5	56	112	3.5	2.7	2.5
M4	XXX	–	XXX	XXX	0.7	63	126	4.5	3.4	3.3
M5	XXX	–	XXX	XXX	0.8	70	140	6	4.9	4.2
M6	XXX	XXX	XXX	XXX	1	80	160	6	4.9	5
M8	XXX	XXX	XXX	XXX	1.25	90	180	8	6.2	6.8
M10	XXX	XXX	XXX	(XXX)	1.5	100	200	10	8	8.5
M12	XXX	XXX	XXX	XXX	1.75	110	220	9	7	10.2
M14	XXX	XXX	XXX	XXX	2	110	220	11	9	12
M16	XXX	XXX	XXX	XXX	2	110	220	12	9	14
M20	XXX	XXX	XXX	XXX	2.5	140	280	16	12	17.5
M24	XXX	–	XXX	XXX	3	160	300	18	14.5	21

M | 60° | HSS E-PM | Standard | DIN 13 | ISO 2X 6HX | B 4 | h6 DIN 1835 B | ≤2.5×D

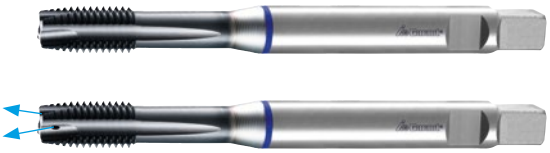
Garant

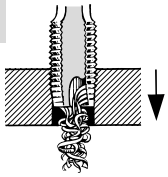
Synchronised through hole machine tap with internal coolant supply

Sturdy design with spiral point and shank to DIN 1835-B. Special geometry for use on machines with **synchronised spindle drives.** The tap is controlled by the synchronising spindle of the machine. Special **TiAlN-S coating** for optimum tool life. For use with **emulsion** (fat content minimum 8%).

13 2285 – **With internal coolant supply** for maximum tool life.

Note: **For use on synchronised spindles,** the **GARANT** quick-change tapping chuck **No. 338100 – 338121 with minimum length adjustment (MLA)** ensures maximum process reliability.





The spiral point evacuates the swarf in the direction of cutting.

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	CuZn	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	N						
13 2280/2285		40		37	35	22								12	10		35	○	●	●	●		

M	11H	13 2280	11H	13 2285					
		Machine tap for synchronised spindles							
		HSS-E-PM		HSS-E-PM internal cooling					
		TiAlN		TiAlN	mm	mm	mm	mm	mm
M2,5		XXX		–	0.45	70	6	4.9	2.05
M3		XXX		–	0.5	70	6	4.9	2.5
M4		XXX		–	0.7	70	6	4.9	3.3
M5		XXX		XXX	0.8	70	6	4.9	4.2
M6		XXX		XXX	1	80	6	4.9	5
M8		XXX		XXX	1.25	90	8	6.2	6.8
M10		XXX		XXX	1.5	100	10	8	8.5
M12		XXX		XXX	1.75	110	12	9	10.2
M16		XXX		XXX	2	110	12	9	14

M | 60° | HSS E-PM | DIN 13 | ISO 2X 6HX | D 4 | 15° | h9 | ≤2×D

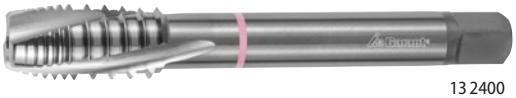
DIN 371 ≤ M12 | DIN 376 M16

Garant

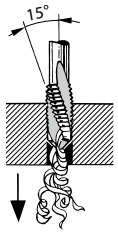
Through hole machine tap with interrupted thread

Sturdy design with 15° left-hand spiral. With interrupted thread, this **reduces torque** and **improves distribution of the lubricant.**
Particularly suitable for **titanium alloys** and **pure titanium.**

Advantage: **Ideally suited for use on resilient materials and thin-walled components.** Low frictional resistance, thus no material deformation is caused.



13 2400



The left hand spiral evacuates the swarf in the direction of cutting.

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	Graphite GRP CRP	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	N						
13 2400		15	15			18	9	3								4		○	●	●			

M	11H	13 2400				
		Through hole machine tap with interrupted thread				
		HSS-E-PM	mm	mm	mm	mm
M2,5		XXX	0.45	50	2.8	2.1	2.05
M3		XXX	0.5	56	3.5	2.7	2.5
M4		XXX	0.7	63	4.5	3.4	3.3
M5		XXX	0.8	70	6	4.9	4.2
M6		XXX	1	80	6	4.9	5
M8		XXX	1.25	90	8	6.2	6.8
M10		XXX	1.5	100	10	8	8.5
M12		XXX	1.75	110	12	9	10.2
M16		XXX	2	110	12	9	14

M | 60° | DIN 13 | ISO 2X 6HX | B 4 | h9 | ≤2×D

Garant

Through hole machine tap for Ti-based and Ni-based alloys

Strong spiral point. Guide section with oil grooves, but without chip flutes.

13 2450 – Particularly suitable for **difficult to machine steels up to 850 N/mm².** For use with **emulsion** (fat content minimum 8%).

Advantage: **Particularly strong, optimum self-guidance** and **no recutting** when reversed.

13 2420

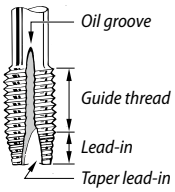
HSS E-PM | DIN 371 | DIN 376

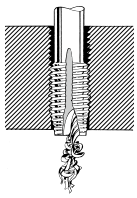
≤ M12 | ≥ M14

13 2450

HSS E | DIN 371 | DIN 376

≤ M10 | ≥ M12





Chip clearance in the direction of cutting

Suitable for/ v_c [m/min]	Alu	PMMA acrylic	PE-HD	PA 66	PEEK	PF 31	AFRP aramid	Hybrid	< 500 N	< 750 N	< 900 N	INOX < 900 N	INOX > 900 N	Ti > 850 N	Inconel®	CuZn	MMC	Uni					
ISO code	N	N	N	N	N	N	N	N	P	P	P	M	M	S	S	N	N						
13 2420								●						6	2		○		●	●			
13 2450	16								20	19	19	8	6	4	2	16		○	●	●			

M	11H 13 2420	11H 13 2450							
	Machine tap								
	HSS-E-PM	HSS-E							
	nitrided + va-porised	TiCN			13 2420	13 2450	13 2420	13 2450	
	mm	mm	mm	mm	mm	mm	mm	mm	mm
M2	XXX	–	0.4	45	2.8	–	2.1	–	1.6
M2,5	XXX	–	0.45	50	2.8	–	2.1	–	2.05
M3	XXX	XXX	0.5	56	3.5	3.5	2.7	2.7	2.5
M4	XXX	XXX	0.7	63	4.5	4.5	3.4	3.4	3.3
M5	XXX	XXX	0.8	70	6	6	4.9	4.9	4.2
M6	XXX	XXX	1	80	6	6	4.9	4.9	5
M8	XXX	XXX	1.25	90	8	8	6.2	6.2	6.8

M	11H 13 2420	11H 13 2450							
	Machine tap								
	HSS-E-PM	HSS-E							
	nitrided + va-porised	TiCN			13 2420	13 2450	13 2420	13 2450	
	mm	mm	mm	mm	mm	mm	mm	mm	mm
M10	XXX	XXX	1.5	100	10	10	8	8	8.5
M12	XXX	XXX	1.75	110	12	9	9	7	10.2
M14	XXX	–	2	110	11	–	9	–	12
M16	XXX	XXX	2	110	12	12	9	9	14
M20	XXX	XXX	2.5	140	16	16	12	12	17.5
M24	XXX	XXX	3	160	18	18	14.5	14.5	21

M | 60° | HSS E | DIN 13 | ISO 2X 6HX | C 3 | h9 | ≤3×D

DIN 371 | DIN 376

≤ M10 | ≥ M12

Garant

Through hole and blind hole machine tap for cast iron

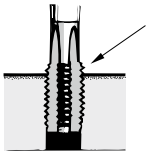
With straight flutes and short chamfer lead (2 – 3 turns).

Advantage:

13 2550 – ■ **Improved wear properties** due to hard coating.
■ **Higher cutting speeds** due to reduction of thermal load on cutting edges.
■ **Dry machining possible** on cast iron – cooling lubricant not necessary.

13 2500

13 2550



Nitrided surface – the abrasive cast iron material would heavily abrade taps which are not nitrided.

4 cutting edges (from size M5).

4 flutes (from size M5).

Particularly wear-resistant due to nitrided surface (13 2500).

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG	GGG					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	K	K					
13 2500																	13	9		●		○	
13 2550																	16	14		●		○	

M	11H 13 2500	11H 13 2550					
	Machine tap for cast iron						
	nitrided	TiCN					
	mm	mm	mm	mm	mm	mm	mm
M2	XXX	XXX	0.4	45	2.8	2.1	1.6
M3	XXX	XXX	0.5	56	3.5	2.7	2.5
M4	XXX	XXX	0.7	63	4.5	3.4	3.3
M5	XXX	XXX	0.8	70	6	4.9	4.2
M6	XXX	XXX	1	80	6	4.9	5
M8	XXX	XXX	1.25	90	8	6.2	6.8

M	11H 13 2500	11H 13 2550					
	Machine tap for cast iron						
	nitrided	TiCN					
	mm	mm	mm	mm	mm	mm	mm
M10	XXX	XXX	1.5	100	10	8	8.5
M12	XXX	XXX	1.75	110	9	7	10.2
M14	XXX	XXX	2	110	11	9	12
M16	XXX	XXX	2	110	12	9	14
M18	XXX	–	2.5	125	14	11	15.5
M20	XXX	XXX	2.5	140	16	12	17.5

M | 60° | HSS E-PM | Standard | DIN 13 | ISO 2X 6HX | h6 DIN 1835 B | ≤2.5×D

Synchronised through and blind hole machine tap with internal coolant supply

Sturdy design with shank to DIN 1835-B. Special geometry for use on machines with **synchronised spindle drives.** The tap is controlled by the synchronising spindle of the machine.
Special TiAlN coating for optimum tool life. For use with **emulsion** (fat content minimum 8 %).
Also outstandingly suitable for **bainite cast iron (ADI)**.

Note: **For use on synchronised spindles,** the **GARANT** quick-change tapping chuck **No. 338100 – 338121 with minimum length adjustment (MLA)** ensures maximum process reliability.

C 3

13 2555

E 1½

13 2560

C 3

13 2565

Suitable for/ v_c [m/min]	PMMA acrylic	PE-HD	PA 66	PEEK	PF 31	AFRP aramid	PVDF GF20	POM GF25	PA 66 GF30	PEEK GF30	PTFE CF25	PEEK CF30	Hybrid	Honey-comb sandwich	GJS ADI ≥ 800 N	MMC	GRP	CRP					
ISO code	N	N	N	N	N	N	N	N	N	N	N	N	N	N	K	N	N	N					
13 2555–13 2565															20					●	○		○

M	11H 13 2555	11H 13 2560	11H 13 2565					
	Machine tap for synchronised spindles							
	HSS-E-PM Form C	HSS-E-PM Form E	HSS-E-PM IC / Form C					
	TiAlN	TiAlN	TiAlN	mm	mm	mm	mm	mm
M4	XXX	XXX	–	0.7	70	6	4.9	3.3
M5	XXX	XXX	XXX	0.8	70	6	4.9	4.2
M6	XXX	XXX	XXX	1	80	6	4.9	5
M8	XXX	XXX	XXX	1.25	90	8	6.2	6.8
M10	XXX	XXX	XXX	1.5	100	10	8	8.5
M12	XXX	XXX	XXX	1.75	110	12	9	10.2

M | 60° | Carbide | DIN 13 | ISO 2X 6HX | C 3 | h6 | ≤3×D

DIN 371 ≤ M10 | DIN 376 ≥ M12

Carbide through and blind hole machine tap

Very sturdy, with short chamfer lead (2 – 3 turns).
Size M3–M10 – **Solid carbide version.**
Size M12; M16 – **Carbide inserts.**
Advantage: **Optimum self-guidance.**

13 2570

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	CuZn					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	K	N					
13 2570																	16	20		●		○	

M	11H 13 2570				
	Carbide machine tap				
		mm	mm	mm	mm	mm
M3	XXX	0.5	56	3.5	2.7	2.5
M4	XXX	0.7	63	4.5	3.4	3.3
M5	XXX	0.8	70	6	4.9	4.2
M6	XXX	1	80	6	4.9	5
M8	XXX	1.25	90	8	6.2	6.8
M10	XXX	1.5	100	10	8	8.5
M12	XXX	1.75	110	9	7	10.2
M16	XXX	2	110	12	9	14

M | 60° | HSS E | DIN 352 | DIN 13 | ISO 2 6H | C 3 | h9 | ≤3×D

Garant

Through and blind hole machine tap stub

With 6° flute angle and short chamfer lead (2 – 3 turns).
Application: For use as machine tap or for cleaning existing threads by hand.

13 2600

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	CuZn
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	K	N
13 2600																	10	13

M	11H	13 2600 Brass machine tap short					
			mm	mm	mm	mm	mm
M2		XXX	0.4	36	2.8	2.1	1.6
M2,5		XXX	0.45	40	2.8	2.1	2.05
M3		XXX	0.5	40	3.5	2.7	2.5
M4		XXX	0.7	45	4.5	3.4	3.3
M5		XXX	0.8	50	6	4.9	4.2
M6		XXX	1	50	6	4.9	5
M8		XXX	1.25	56	6	4.9	6.8
M10		XXX	1.5	70	7	5.5	8.5

M | 60° | HSS E-PM | DIN 13 | ISO 2 6H | CS 3 | h9 | ≤3×D

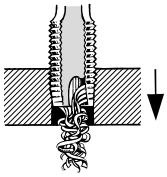
DIN 371 ≤ M10 | DIN 376 ≥ M12

Garant

Through hole machine tap, for copper

With **the latest generation of sp²**.
Very sturdy design, with **spiral point** and **special cutting edge geometry** for **copper materials.**
For use with **emulsion** (fat content minimum 8%).

13 2610



The spiral point evacuates the swarf in the cutting direction.

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	AlCuPb AW2011 Index 50	< 500 N	< 750 N	CuZnPb CW603N Index 100	CuNiZn CW400J Index 90	CuSnZn CC493K Index 90	CuPb CW113C Index 80	CuSnPb CW458K Index 70	CuNiZn CW408J Index 60	CuZnPb CW604N Index 60	CuZnMn CW713R Index 50	CuAlFe CC333G Index 50	CuZnAl CC766S Index 40	ECu58 CW005A Index 20	ECu57 CW004A Index 20
ISO code	N	N	N	N	P	P	N	N	N	N	N	N	N	N	N	N	N	N
13 2610				18			11	14	18	18	14	14	18	11	11	11	14	14

M	11H	13 2610 Machine tap HSS-E-PM DLC					
			mm	mm	mm	mm	mm
M2		XXX	0.4	45	2.8	2.1	1.6
M2,5		XXX	0.45	50	2.8	2.1	2.05
M3		XXX	0.5	56	3.5	2.7	2.5
M4		XXX	0.7	63	4.5	3.4	3.3
M5		XXX	0.8	70	6	4.9	4.2
M6		XXX	1	80	6	4.9	5
M8		XXX	1.25	90	8	6.2	6.8
M10		XXX	1.5	100	10	8	8.5
M12		XXX	1.75	110	9	7	10.2
M16		XXX	2	110	12	9	14

M | 60° | DIN 13 | B 4 | h9 | ≤3×D

Through hole machine tap

Spiral point with oil grooves.
Guide section with oil grooves, but without chip flutes.

13 1765 – **With extra long shank..**
All sizes: Shank **to DIN 376 (= shank Ø relieved);** means it is highly suitable for use at great depths as a **universal tap.**

13 2640 – Size M1.7, M2.3, and M2.6 with old DIN profile.

13 2705 – Low tendency to edge build-up.

Advantage:

13 1765 – Designed **for tapping threads where access is difficult.**

13 2640

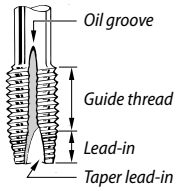
HSS E | DIN 371 ≤ M10 | DIN 376 ≥ M12 | ISO 1 4H ≤ M1.4 | ISO 2 6H ≥ M1.6

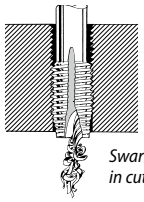
13 2645

HSS E | DIN 371 ≤ M10 | DIN 376 ≥ M12 | ISO 2 6H

13 2705

HSS E | DIN 371 ≤ M10 | DIN 376 ≥ M12 | ISO 2 6H





13 1765

HSS E-PM | Standard | ISO 2 6H

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	CuZn	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	N						
13 1765		24		**21**	**21**	**21**	**9**							**8**			18	●	●	○			
13 2640		13		**15**	**15**	**15**	6							**6**			13	●	●	○			
13 2645		11		12	**8**	**7**	4							**4**			12	●	●				
13 2705		14		14	**10**	**9**	**5**							**5**			14	●	●	●			

M	11H 13 2640 Garant	12H 13 2645 HOLEX	12H 13 2705	11H 13 1765 Garant								
	Machine tap											
	HSS-E	HSS-E	HSS-E	extra long HSS-E-PM		13 2640 13 2645 13 2705	13 1765	13 2640 13 2645 13 2705	13 1765	13 2640 13 2645 13 2705	13 1765	
	vaporised	vaporised	TiN	vaporised	mm	mm	mm	mm	mm	mm	mm	mm
M1	XXX	–	–	–	0.25	40	–	2.5	–	2.1	–	0.75
M1,2	XXX	–	–	–	0.25	40	–	2.5	–	2.1	–	0.95
M1,4	XXX	–	–	–	0.3	40	–	2.5	–	2.1	–	1.1
M1,6	XXX	–	–	–	0.35	40	–	2.5	–	2.1	–	1.25
M1,7	XXX	–	–	–	0.35	40	–	2.5	–	2.1	–	1.3
M1,8	XXX	–	–	–	0.35	40	–	2.5	–	2.1	–	1.45
M2	XXX	–	–	–	0.4	45	–	2.8	–	2.1	–	1.6
M2,2	XXX	–	–	–	0.45	45	–	2.8	–	2.1	–	1.75
M2,3	XXX	–	–	–	0.4	45	–	2.8	–	2.1	–	1.9
M2,5	XXX	–	–	–	0.45	50	–	2.8	–	2.1	–	2.05
M2,6	XXX	–	–	–	0.45	50	–	2.8	–	2.1	–	2.1
M3	XXX	XXX	XXX	–	0.5	56	–	3.5	–	2.7	–	2.5
M3,5	XXX	–	–	–	0.6	56	–	4	–	3	–	2.9
M4	XXX	XXX	XXX	XXX	0.7	63	112	4.5	2.8	3.4	2.1	3.3
M5	XXX	XXX	XXX	XXX	0.8	70	125	6	3.5	4.9	2.7	4.2
M6	XXX	XXX	XXX	XXX	1	80	125	6	4.5	4.9	3.4	5
M7	XXX	–	–	–	1	80	–	7	–	5.5	–	6
M8	XXX	XXX	XXX	XXX	1.25	90	140	8	6	6.2	4.9	6.8
M10	XXX	XXX	XXX	XXX	1.5	100	160	10	7	8	5.5	8.5
M12	XXX	XXX	XXX	XXX	1.75	110	180	9	9	7	7	10.2
M14	XXX	XXX	–	–	2	110	–	11	–	9	–	12
M16	XXX	XXX	–	XXX	2	110	220	12	12	9	9	14
M18	XXX	–	–	–	2.5	125	–	14	–	11	–	15.5
M20	XXX	XXX	–	XXX	2.5	140	280	16	16	12	12	17.5
M22	XXX	–	–	–	2.5	140	–	18	–	14.5	–	19.5
M24	XXX	XXX	–	–	3	160	–	18	–	14.5	–	21
M27	XXX	–	–	–	3	160	–	20	–	16	–	24
M30	XXX	–	–	–	3.5	180	–	22	–	18	–	26.5

M | 60° | HSS E-PM | DIN 13 | B 4 | h9 | ≤3×D

GARANT Master Tap through hole machine tap

Universal taps, designed for use in a wide spectrum of materials with high process reliability.

- HSS-E-PM tool material for a high degree of wear resistance.
- Reduced coefficient of friction due to the new high-performance coating.
- Special geometry for optimum swarf evacuation.

13 1770 – **With extra long shank.**

13 1770 Size M3–M10 – Shank to DIN 371.

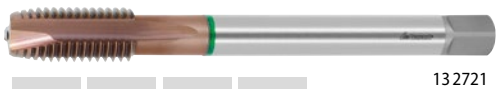
13 1770 Size M12–M20 – Shank to DIN 376.

13 2723 – **With internal coolant feed.**

13 2724 – **Tolerance class: ISO 3X/6GX**

Advantage:

13 1770 – Designed for tapping threads in places where access is difficult.



13 2721

DIN 371 | DIN 376 | ISO 1X 4HX | ISO 2X 6HX

≤ M10 | ≥ M12 | ≥ M1.4 | ≥ M1.6

13 2723

DIN 371 | DIN 376 | ISO 2X 6HX

≤ M10 | ≥ M12

13 2724

DIN 371 | DIN 376 | ISO 3X 6GX

≤ M10 | ≥ M12

13 1770

Standard | ISO 2X 6HX

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	GG(G)	CuZn	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	K	N						
13 1770	24	28	16	24	24	20	10	6						8	6	16	16	●	●	●			
13 2721–13 2724	30	35	20	30	30	25	12	8						10	8	20	20	●	●	●			

M

GARANT Master Tap machine tap

	13 2721	13 2723	13 2724	13 1770						
	Form B 6HX	IC / Form B 6HX	Form B 6GX	extra long form B 6HX						
	AlTiX	AlTiX	AlTiX	AlTiX	mm	mm	mm	mm	mm	mm
M1,4	XXX	–	–	–	0.3	40	–	2.5	2.1	1.1
M1,6	XXX	–	–	–	0.35	40	–	2.5	2.1	1.25
M1,7	XXX	–	–	–	0.35	40	–	2.5	2.1	1.35
M1,8	XXX	–	–	–	0.35	40	–	2.5	2.1	1.45
M2	XXX	–	XXX	–	0.4	45	–	2.8	2.1	1.6
M2,2	XXX	–	–	–	0.45	45	–	2.8	2.1	1.75
M2,3	XXX	–	–	–	0.4	45	–	2.8	2.1	1.9
M2,5	XXX	–	–	–	0.45	50	–	2.8	2.1	2.05
M2,6	XXX	–	–	–	0.45	50	–	2.8	2.1	2.15
M3	XXX	–	XXX	XXX	0.5	56	100	3.5	2.7	2.5
M3,5	XXX	–	–	–	0.6	56	–	4	3	2.9
M4	XXX	–	XXX	XXX	0.7	63	125	4.5	3.4	3.3
M5	XXX	–	XXX	XXX	0.8	70	160	6	4.9	4.2
M6	XXX	XXX	XXX	XXX	1	80	160	6	4.9	5
M8	XXX	XXX	XXX	XXX	1.25	90	180	8	6.2	6.8
M10	XXX	XXX	XXX	XXX	1.5	100	200	10	8	8.5
M12	XXX	XXX	XXX	XXX	1.75	110	200	9	7	10.2
M14	XXX	XXX	XXX	XXX	2	110	200	11	9	12
M16	XXX	XXX	XXX	XXX	2	110	200	12	9	14
M20	XXX	XXX	XXX	XXX	2.5	140	200	16	12	17.5
M24	XXX	–	XXX	–	3	160	–	18	14.5	21

GARANT Master Tap – the innovation in thread tapping

The **GARANT Master Tap** stands for the unique combination of high-quality tool material, innovative geometry and latest coating technology.
These taps thus offer outstanding performance in a wide range of materials, coupled with very high process reliability and cost-effectiveness.

Universal use – Reducing the variety of tools usually required.
Innovative geometry – exact thread and high process reliability.
Special coating – outstanding tool life.

GARANT Master Tap for through holes, also available as a set (M3; M4; M5; M6; M8; M10; M12) in a handy plastic case: No. 14 6435 M3-12.

M | 60° | HSS E-PM | Standard | DIN 13 | ISO 2X 6HX | B 4 | h6 DIN 1835 B | ≤3×D

GARANT

Synchronised through hole machine tap with internal coolant supply

Sturdy version with lead-in taper and **shank to DIN 1835-B.**Special geometry for **general-purpose use** on machines with **synchronised spindle drive.** The tap is controlled by the synchronising spindle of the machine.
Special TiAlN coating for optimum tool life.
Can be used with **emulsion** (fat content minimum 8%).

13 2745 – **With internal coolant feed** for maximum tool life.

Note: **For use on synchronised spindles,** the **GARANT** quick-change tapping chuck **No. 338100 – 338121 with minimum length adjustment (MLA)** ensures very high process reliability.

13 2741

13 2745

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	CuZn	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	N						
13 2741/2745	40	40		37	35	22	12	7						12	10		35	●	●	●	●		

M	11H 13 2741	11H 13 2745					
	Machine tap for synchronised spindles						
	HSS-E-PM Form B 6HX	HSS-E-PM IC / Form B 6HX					
	TiAlN	TiAlN	mm	mm	mm	mm	mm
M2,5	XXX	–	0.45	70	6	4.9	2.05
M3	XXX	–	0.5	70	6	4.9	2.5
M4	XXX	–	0.7	70	6	4.9	3.3
M5	XXX	XXX	0.8	70	6	4.9	4.2
M6	XXX	XXX	1	80	6	4.9	5
M8	XXX	XXX	1.25	90	8	6.2	6.8
M10	XXX	XXX	1.5	100	10	8	8.5
M12	XXX	XXX	1.75	110	12	9	10.2
M14	XXX	–	2	110	12	9	12
M16	XXX	XXX	2	110	12	9	14
M20	XXX	–	2.5	140	16	12	17.5

M-LH | 60° | DIN 13 | B 4 | h9 | ≤3×D

DIN 371 ≤ M10 | DIN 376 ≥ M12

GARANT

Through hole machine tap left-hand thread

13 2800 – With strong spiral point. **Guide section with oil grooves,** but without chip flutes.
13 2805 – **Universal taps**, designed for use in a wide spectrum of materials with high process reliability.

- HSS-E-PM tool material for a high degree of wear resistance.
- Reduced coefficient of friction due to the new high-performance coating.
- Special geometry for optimum swarf evacuation.

Advantage:

13 2800 – **Particularly strong, optimal self-guidance** and no recutting when reversed.

13 2800

HSS E | ISO 2 6H

13 2805

HSS E-PM | ISO 2X 6HX

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	GG(G)	CuZn	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	K	N						
13 2800		13		15	15	15	6							6			13	●	●	○			
13 2805	30	35	20	30	30	25	12	8						10	8	20	20	●	●	●			

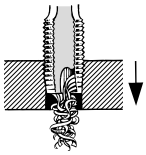
M-LH	11H 13 2800	11H 13 2805					
	Machine tap, left-hand thread	GARANT Master Tap machine tap left-hand thread					
	HSS-E 6H	HSS-E-PM 6HX					
	nitrided and vaporised	AlTiX	mm	mm	mm	mm	mm
M3	XXX	XXX	0.5	56	3.5	2.7	2.5
M4	XXX	XXX	0.7	63	4.5	3.4	3.3
M5	XXX	XXX	0.8	70	6	4.9	4.2
M6	XXX	XXX	1	80	6	4.9	5
M8	XXX	XXX	1.25	90	8	6.2	6.8
M10	XXX	XXX	1.5	100	10	8	8.5
M12	XXX	XXX	1.75	110	9	7	10.2
M14	XXX	XXX	2	110	11	9	12
M16	XXX	XXX	2	110	12	9	14
M20	XXX	XXX	2.5	140	16	12	17.5
M24	XXX	–	3	160	18	14.5	21

MF | 60° | DIN 374 | DIN 13 | ISO 2 6H | h9 | ≤3×D

Through hole machine tap

With spiral point.

13 2835 – (Form CS) 2 – 3 – start chamfer lead – with spiral point.
TiN coated.
Can be used with **soluble coolant** (fat content min. 8 %).



The spiral point evacuates the swarf in the cutting direction.

HSS E | B | 4

13 2830

HSS E-PM | CS | 3

13 2835

HSS E | B | 4

13 2840

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	Graphite GRP CRP	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	N						
13 2830/2840		13		15	15														●	○			
13 2835		28		27	23	17	7												●	●			

M× pitch	11H 13 2830	11H 13 2835	12H 13 2840	L_{tot}			
	Garant		HOLEX				
		Machine tap					
	HSS-E Form B	HSS-E-PM Form CS	HSS-E Form B				
		TiN					
				mm	mm	mm	mm
2×0,25	XXX	–	–	45	1.4	–	1.75
2,5×0,35	XXX	–	–	50	1.8	–	2.15
3×0,35	XXX	–	–	56	2.2	–	2.65
4×0,35	XXX	–	–	63	2.8	2.1	3.65
4×0,5	XXX	–	–	63	2.8	2.1	3.5
5×0,5	XXX	XXX	XXX	70	3.5	2.7	4.5
6×0,5	XXX	–	XXX	80	4.5	3.4	5.5
6×0,75	XXX	XXX	XXX	80	4.5	3.4	5.2
7×0,75	XXX	–	–	80	5.5	4.3	6.2
8×0,5	XXX	–	XXX	80	6	4.9	7.5
8×0,75	XXX	XXX	XXX	80	6	4.9	7.2
8×1	XXX	XXX	XXX	90	6	4.9	7
9×1	XXX	–	–	90	7	5.5	8
10×0,75	XXX	–	–	90	7	5.5	9.2
10×1	XXX	XXX	XXX	90	7	5.5	9
10×1,25	XXX	XXX	XXX	100	7	5.5	8.8
11×1	XXX	–	–	90	8	6.2	10
12×1	XXX	XXX	XXX	100	9	7	11
12×1,25	XXX	XXX	XXX	100	9	7	10.8
12×1,5	XXX	XXX	XXX	100	9	7	10.5
14×1	XXX	–	XXX	100	11	9	13
14×1,25	XXX	–	XXX	100	11	9	12.8
14×1,5	XXX	XXX	XXX	100	11	9	12.5
15×1	XXX	–	–	100	12	9	14
15×1,5	XXX	–	–	100	12	9	13.5
16×1	XXX	–	XXX	100	12	9	15
16×1,5	XXX	XXX	XXX	100	12	9	14.5
18×1	XXX	–	XXX	110	14	11	17
18×1,5	XXX	XXX	XXX	110	14	11	16.5
18×2	XXX	–	–	125	14	11	16
20×1	XXX	–	–	125	16	12	19
20×1,5	XXX	XXX	XXX	125	16	12	18.5
20×2	XXX	–	–	140	16	12	18
22×1	XXX	–	–	125	18	14.5	21
22×1,5	XXX	XXX	XXX	125	18	14.5	20.5
22×2	XXX	–	–	140	18	14.5	20
24×1	XXX	–	–	140	18	14.5	23
24×1,5	XXX	XXX	XXX	140	18	14.5	22.5
24×2	XXX	–	–	140	18	14.5	22
25×1,5	XXX	–	XXX	140	18	14.5	23.5
26×1,5	XXX	–	–	140	18	14.5	24.5
27×1,5	XXX	–	–	140	20	16	25.5
27×2	XXX	–	–	140	20	16	25
30×1	XXX	–	–	150	22	18	29
30×1,5	XXX	–	–	150	22	18	28.5
30×2	XXX	–	–	150	22	18	28
32×1,5	XXX	–	–	150	22	18	30.5
33×1,5	XXX	–	–	160	25	20	31.5
33×2	XXX	–	–	160	25	20	31
35×1,5	XXX	–	–	170	28	22	33.5
36×1,5	XXX	–	–	170	28	22	34.5
36×2	XXX	–	–	170	28	22	34
38×1,5	XXX	–	–	170	28	22	36.5
40×1,5	XXX	–	–	170	32	24	38.5
50×1,5	XXX	–	–	190	36	29	48.5
63×1,5	XXX	–	–	220	45	35	61.5

MF | 60° | DIN 374 | DIN 13 | ISO 2X 6HX | B 4 | h9 | ≤3×D

HSS E ≤22×1,5 | HSS 30×1,5

Garant Through hole machine tap

Recommendation: For **TOOLOX materials** we recommend **deviating from the DIN data** (see table) by drilling the tapping hole ∅ **0.05** to **0.3 mm** larger.

13 2860

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	TOOLOX® 33 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	Graphite GRP CRP					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	H	M	M	S	N					
13 2860				20	19	19	9							4					●	●			

M× pitch	11H	13 2860 Machine tap TiCN	L_{tot} mm	mm	mm	mm
3×0,35		XXX	56	2.2	–	2.65
5×0,5		XXX	70	3.5	2.7	4.5
6×0,5		XXX	80	4.5	3.4	5.5
6×0,75		XXX	80	4.5	3.4	5.2
8×0,75		XXX	80	6	4.9	7.2
8×1		XXX	90	6	4.9	7
10×1		XXX	90	7	5.5	9
12×1		XXX	100	9	7	11

M× pitch	11H	13 2860 Machine tap TiCN	L_{tot} mm	mm	mm	mm
12×1,5		XXX	100	9	7	10.5
14×1,5		XXX	100	11	9	12.5
16×1,5		XXX	100	12	9	14.5
18×1,5		XXX	110	14	11	16.5
20×1,5		XXX	125	16	12	18.5
22×1,5		XXX	125	18	14.5	20.5
30×1,5		XXX	150	22	18	28.5

MF | 60° | HSS E-PM | DIN 13 | ISO 2X 6HX | C 3 | h9 | ≤1.5×D

DIN 371 ≤10×1 | DIN 374 ≥12×1,5

Garant Through and blind hole machine taps

Sturdy version.

Recommendation: For **very hard steels, TOOLOX** and **HARDOX materials** we recommend **deviating from the DIN data** (see table) by **drilling the core hole ∅ 0.05** to **0.3 mm** larger. For use only with a length compensation chuck – even on machines with synchronised spindle drives.

13 2861

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	TOOLOX® 33 HRC	TOOLOX® 44 HRC	HARDOX® 500 < 1600 N	INOX < 900 N	Graphite					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	H	H	H	M	N					
13 2861							12	7	2					4	3	2		15	●				

M× pitch	11H	13 2861 Machine tap TiCN	L_{tot} mm	mm	mm	mm
8×1		XXX	90	8	6.2	7
10×1		XXX	90	10	8	9
12×1,5		XXX	100	9	7	10.5
14×1,5		XXX	100	11	9	12.5
16×1,5		XXX	100	12	9	14.5

MF | 60° | Solid carbide | DIN 371 | DIN 13 | ISO 2X 6HX | D 4 | h6 | ≤2×D

Garant Solid carbide machine tap for through and blind holes

Particularly sturdy version. For the highest performance demands.

Recommendation: For **very hard steels, TOOLOX** and **HARDOX materials** we recommend **deviating from the DIN data** (see table) by drilling the tapping hole ∅ **0.05** to **0.3mm** larger. For use only with a length compensation chuck – even on machines with synchronised spindle drives.

13 2862

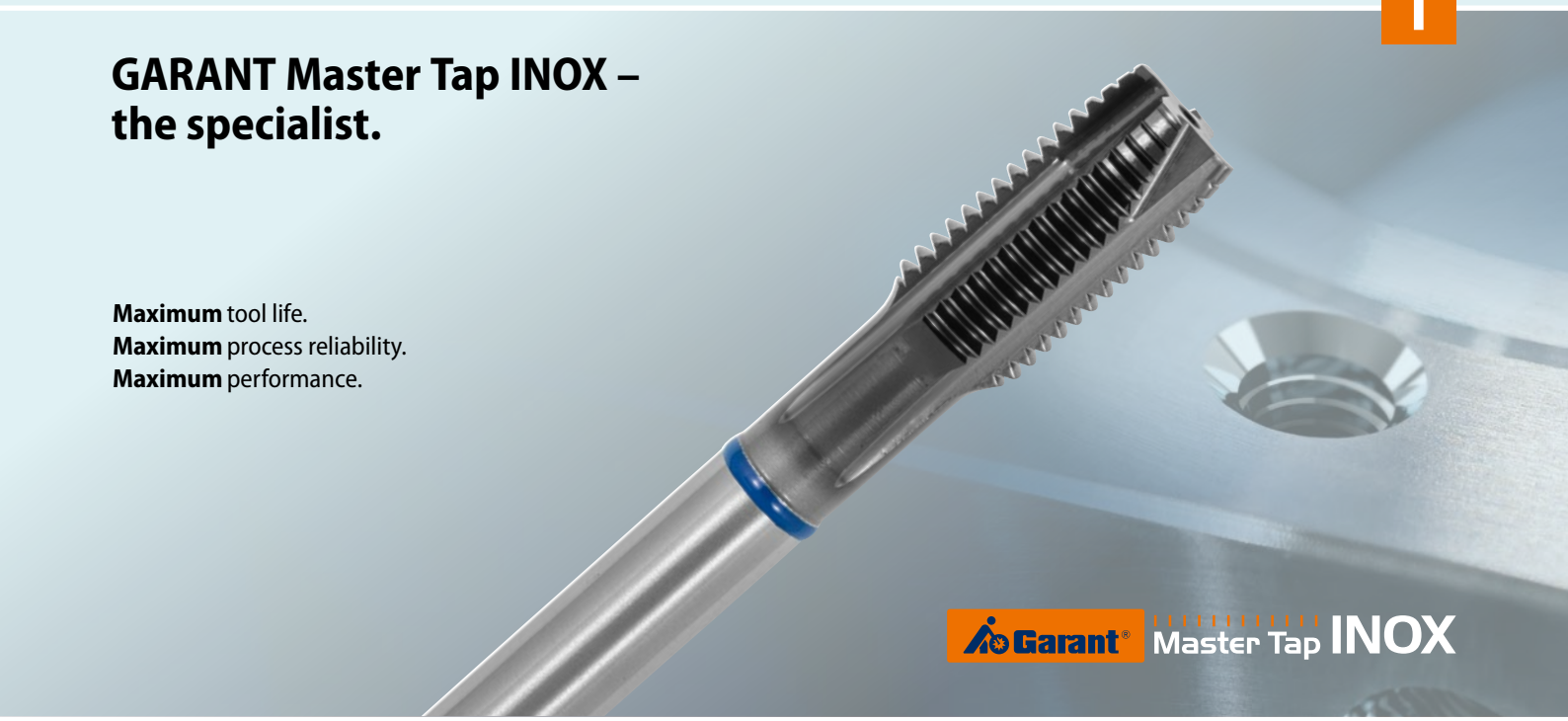
Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	TOOLOX® 33 HRC	TOOLOX® 44 HRC	HARDOX® 500 < 1600 N	INOX < 900 N	Graphite GRP CRP					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	H	H	H	M	N					
13 2862									3	2	1	1		5	4	3		18	●				

M× pitch	11H	13 2862 Solid carbide machine tap TiAlN	L_{tot} mm	mm	mm	mm
8×1		XXX	90	8	6.2	7
10×1		XXX	100	10	8	9
12×1,5		XXX	110	12	9	10.5

GARANT Master Tap INOX

GARANT Master Tap INOX – the specialist.

Maximum tool life.
Maximum process reliability.
Maximum performance.



MF | 60° | DIN 374 | DIN 13 | ISO 2X 6HX | B ⟷4⟷ | h9 | ≤3×D

Through hole machine tap for stainless steels

13 2870 – **Strong spiral point.**
Guide section **with oil grooves.**

13 2875 – **GARANT Master Tap INOX**:
powerful tap, specially developed for **tapping to high process reliability in stainless and acid-resistant steels** and also **duplex materials**.

- **HSS-E-PM tool material** for maximum wear resistance
- The latest generation of **TiALN multi-layer coating**
- **Parameterised flute geometry** for optimum chip formation and **rigidity**

HSS E

13 2870

HSS E-PM

13 2875

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	CuZn	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	N						
13 2870		13		**15**	**15**	15								**6**			13	○	●	○			
13 2875		28			23	23	**12**							**11**	**9**				●	●			

M× pitch	13 2870	13 2875	L_{tot}			
	Machine tap	GARANT Master Tap INOX machine tap				
	HSS-E	HSS-E-PM				
	vaporised	TiAlN	mm	mm	mm	mm
4×0,5	XXX	XXX	63	2.8	2.1	3.5
5×0,5	XXX	XXX	70	3.5	2.7	4.5
6×0,5	–	XXX	80	4.5	3.4	5.5
6×0,75	XXX	XXX	80	4.5	3.4	5.2
8×0,75	XXX	XXX	80	6	4.9	7.2
8×1	XXX	XXX	90	6	4.9	7
10×1	XXX	XXX	90	7	5.5	9
10×1,25	XXX	XXX	100	7	5.5	8.8
12×1	XXX	XXX	100	9	7	11
12×1,25	XXX	XXX	100	9	7	10.8
12×1,5	XXX	XXX	100	9	7	10.5
14×1,5	XXX	XXX	100	11	9	12.5
16×1,5	XXX	XXX	100	12	9	14.5
18×1,5	XXX	XXX	110	14	11	16.5
20×1,5	XXX	XXX	125	16	12	18.5
22×1,5	XXX	XXX	125	18	14.5	20.5
24×1,5	XXX	XXX	140	18	14.5	22.5
26×1,5	–	XXX	140	18	14.5	24.5
30×1,5	–	XXX	150	22	18	28.5

MF | 60° | HSS E | DIN 374 | DIN 13 | ISO 2X 6HX | C | 3 | h9 | ≤3×D

Through and blind hole machine tap

Advantage: **Dry machining** of cast iron – cooling lubricant not necessary. Particularly wear-resistant due to nitrided surfaces.

13 2880

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG	GGG
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	K	K
13 2880																	13	9

M× pitch	11H 13 2880 Machine tap nitrided	L_{tot} mm	mm	mm	mm
4×0,5	XXX	63	2.8	2.1	3.5
5×0,5	XXX	70	3.5	2.7	4.5
6×0,75	XXX	80	4.5	3.4	5.2
8×0,75	XXX	80	6	4.9	7.2
8×1	XXX	90	6	4.9	7
10×1	XXX	90	7	5.5	9
10×1,25	XXX	90	7	5.5	8.8
12×1	XXX	100	9	7	11
12×1,25	XXX	100	9	7	10.8
12×1,5	XXX	100	9	7	10.5
14×1,5	XXX	100	11	9	12.5
16×1,5	XXX	100	12	9	14.5
18×1,5	XXX	110	14	11	16.5
20×1,5	XXX	125	16	12	18.5
22×1,5	XXX	125	18	14.5	20.5

MF | 60° | HSS E-PM | DIN 374 | DIN 13 | ISO 2X 6HX | B | 4 | h9 | ≤3×D

GARANT Master Tap through hole machine tap

Universal taps, designed for use in a wide spectrum of materials with high process reliability.

- HSS-E-PM tool material for a high degree of wear resistance.
- Reduced coefficient of friction due to the new high-performance coating.
- Special geometry for optimum swarf evacuation.

13 2905

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	GG(G)	CuZn	Uni
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	K	N	
13 2905	30	35	20	30	30	25	12	8						10	8	20	20	●

M× pitch	11I 13 2905 GARANT Master Tap machine tap HSS-E-PM AlTiX	L_{tot} mm	mm	mm	mm
3×0,35	XXX	56	2.2	–	2.65
4×0,5	XXX	63	2.8	2.1	3.5
5×0,5	XXX	70	3.5	2.7	4.5
6×0,5	XXX	80	4.5	3.4	5.5
6×0,75	XXX	80	4.5	3.4	5.2
6,5×0,75	XXX	80	5.5	4.3	5.8
8×0,75	XXX	80	6	4.9	7.2
8×1	XXX	90	6	4.9	7
10×1	XXX	90	7	5.5	9
10×1,25	XXX	100	7	5.5	8.8
12×1	XXX	100	9	7	11
12×1,25	XXX	100	9	7	10.8
12×1,5	XXX	100	9	7	10.5
14×1,5	XXX	100	11	9	12.5
16×1,5	XXX	100	12	9	14.5
18×1,5	XXX	110	14	11	16.5
20×1,5	XXX	125	16	12	18.5
22×1,5	XXX	125	18	14.5	20.5
24×1,5	XXX	140	18	14.5	22.5
26×1,5	XXX	140	18	14.5	24.5
30×1,5	XXX	150	22	18	28.5

MF | 60° | HSS E-PM | Standard | DIN 13 | ISO 2X 6HX | B ≤4×D | h6 DIN 1835 B | ≤3×D

Garant® Synchronised through hole machine tap with internal coolant supply

Sturdy design with spiral point and shank to DIN 1835-B. Special geometry for use on machines with **synchronised spindle drives.** The tap is controlled by the synchronising spindle of the machine. Special **TiAlN-S coating** for optimum tool life. For use with **emulsion** (fat content minimum 8%).

13 2955 – **With internal coolant supply** for maximum tool life.

Note: **For use on synchronised spindles,** the **GARANT** quick-change tapping chuck **No. 338100 – 338121 with minimum length adjustment (MLA)** ensures maximum process reliability.

13 2950

13 2955

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	CuZn	Uni
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	N	
13 2950/2955	40	40		37	35	22	12	7						12	10		35	●

M× pitch	11H 13 2950	11H 13 2955	L_{tot}			
	Machine tap for synchronised spindles					
	HSS-E-PM	HSS-E-PM internal cooling				
	TiAlN	TiAlN	mm	mm	mm	mm
8×1	XXX	XXX	90	8	6.2	7
10×1	XXX	XXX	90	10	8	9
10×1,25	XXX	XXX	100	10	8	8.8
12×1	XXX	XXX	100	12	9	11
12×1,25	XXX	XXX	100	12	9	10.8
12×1,5	XXX	XXX	100	12	9	10.5
14×1,5	XXX	XXX	100	12	9	12.5
16×1,5	XXX	XXX	100	12	9	14.5
20×1,5	XXX	XXX	125	16	12	18.5

MF-LH | 60° | DIN 374 | DIN 13 | h9

Garant® Machine tap, left-hand thread

13 3015 – **GARANT Master Tap Universal taps,** designed for use in a wide spectrum of materials with high process reliability.

- HSS-E-PM tool material for maximum wear resistance.
- Reduced coefficient of friction due to the new high-performance coating.
- Special geometry for optimum swarf evacuation.

Advantage:

13 3010 – Particularly strong, optimal self-guidance. For threads in through holes and blind holes.

13 3010

HSS E | ISO 2 6H | C ≤3×D | ≤2×D

13 3015

HSS E-PM | ISO 2X 6HX | B ≤4×D | ≤3×D

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	GG(G)	CuZn	Uni
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	K	N	
13 3010		13		15	15	15												●
13 3015	30	35	20	30	30	25	12	8						10	8	20	20	●

M× pitch	11H 13 3010	11l 13 3015	L_{tot}			
	Machine tap	GARANT Master Tap machine tap				
	HSS-E form C 6H left-hand thread	HSS-E-PM form B 6HX left-hand thread				
		AlTiX	mm	mm	mm	mm
8×1	XXX	XXX	90	6	4.9	7
10×1	XXX	XXX	90	7	5.5	9
10×1,25	XXX	XXX	100	7	5.5	8.8
12×1,25	XXX	XXX	100	9	7	10.8
12×1,5	XXX	XXX	100	9	7	10.5
16×1,5	XXX	XXX	100	12	9	14.5
20×1,5	XXX	XXX	125	16	12	18.5

G | 55° | DIN 5156 | B ↤4↦ | h9 | ≤3×D

HSS E ≤ 5/8" | HSS ≥ 3/4"

Garant Through hole machine tap

With spiral point.

Application: **For Whitworth parallel pipe threads** DIN-ISO 228/1 (threads that do not form a seal within the connection).

13 3300

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	Graphite GRP CRP	Uni
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	N	
13 3300		13		**15**	**15**													

inch	11H	13 3300 Machine tap	Threads per inch	Thread ∅ mm	L_{tot} mm	mm	mm	mm
G1/8		XXX	28	9.73	90	7	5.5	8.8
G1/4		XXX	19	13.16	100	11	9	11.8
G3/8		XXX	19	16.66	100	12	9	15.25
G1/2		XXX	14	20.96	125	16	12	19

inch	11H	13 3300 Machine tap	Threads per inch	Thread ∅ mm	L_{tot} mm	mm	mm	mm
G5/8		XXX	14	22.91	125	18	14.5	21
G3/4		XXX	14	26.44	140	20	16	24.5
G1		XXX	11	33.25	160	25	20	30.75

G | 55° | DIN 5156 | B ↤4↦ | h9 | ≤3×D

HSS E ≤ 1/2" | HSS ≥ 3/4"

Garant Through hole machine tap

With spiral point.

For use with **emulsion** (fat content minimum 8 %).

Application: **For Whitworth parallel pipe threads** DIN-ISO 228/1 (threads that do not form a seal within the connection).

Recommendation: For **TOOLOX materials** we recommend **deviating from the DIN data** (see table) by drilling the tapping hole ∅ **0.05** to **0.3 mm** larger.

13 3310

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	TOOLOX® 33 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	Graphite GRP CRP
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	H	M	M	S	N
13 3310				20	19	**19**	**9**							**4**				

inch	11H	13 3310 Machine tap TiCN	Threads per inch	Thread ∅ mm	L_{tot} mm	mm	mm	mm
G1/8		XXX	28	9.73	90	7	5.5	8.8
G1/4		XXX	19	13.16	100	11	9	11.8
G3/8		XXX	19	16.66	100	12	9	15.25

inch	11H	13 3310 Machine tap TiCN	Threads per inch	Thread ∅ mm	L_{tot} mm	mm	mm	mm
G1/2		XXX	14	20.96	125	16	12	19
G3/4		XXX	14	26.44	140	20	16	24.5
G1		XXX	11	33.25	160	25	20	30.75

G | 55° | HSS E-PM | DIN 5156 | DIN 13 | C ↤3↦ | h9 | ≤1.5×D

Garant Through and blind hole machine taps

Sturdy version.

Recommendation: For very hard steels, TOOLOX and HARDOX materials we recommend **deviating from the DIN data (see table) by drilling the tapping ∅ 0.05** to **0.3 mm** larger.
For use only with a length compensation chuck – even on machines with synchronised spindle drives.

13 3315

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	TOOLOX® 33 HRC	TOOLOX® 44 HRC	HARDOX® 500 < 1600 N	INOX < 900 N	Graphite
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	H	H	H	M	N
13 3315							**12**	**7**	**2**					**4**	**3**	**2**		15

inches	11H	13 3315 Machine tap TiCN	Threads per inch	Thread ∅ mm	L_{tot} mm	mm	mm	mm
G1/8		XXX	28	9.73	90	7	5.5	8.8
G1/4		XXX	19	13.16	100	11	9	11.8

inches	11H	13 3315 Machine tap TiCN	Threads per inch	Thread ∅ mm	L_{tot} mm	mm	mm	mm
G3/8		XXX	19	16.66	100	12	9	15.25
G1/2		XXX	14	20.96	125	16	12	19

G | 55° | Solid carbide | DIN 371 | D ↔4↔ | h6 | ≤2×D

Garant Solid carbide machine tap for through and blind holes

Especially sturdy design.
For use in heavy duty applications.

Application: **For Whitworth parallel pipe threads** DIN-ISO 228/1 (threads that do not form a seal within the connection).

Recommendation: For **very hard steels, TOOLOX** and **HARDOX materials we recommend deviating from the DIN data** (see table) by drilling the tapping hole ∅ **0.05** to **0.3mm** larger. For use only with a length compensation chuck – even on machines with synchronised spindle drives.

13 3320

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	TOOLOX® 33 HRC	TOOLOX® 44 HRC	HARDOX® 500 < 1600 N	INOX < 900 N	Graphite GRP CRP					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	H	H	H	M	N					
13 3320									3	2	1	1		5	4	3		18	●				

inch	11H	13 3320	Threads per inch	Thread ∅	L_{tot}			
		Solid carbide machine tap						
		TiAlN		mm	mm	mm	mm	mm
G1/8		XXX	28	9.73	100	10	8	8.8
G1/4		XXX	19	13.16	110	14	11	11.8

G | 55° | DIN 5156 | B ↔4↔ | h9 | ≤3×D

Garant Through hole machine tap for stainless steels

13 3325 – **Strong spiral point.** Guide part with oil grooves.

13 3327 – **GARANT Master Tap INOX**: powerful tap, specially developed for **tapping to high process reliability in stainless and acid-resistant steels** and also **duplex materials.**

- **HSS-E-PM tool material** for maximum wear resistance
- The latest generation of **TiAlN multi-layer coating**
- **Parameterised flute geometry** for optimum chip formation and **rigidity**

Advantage: **Particularly strong, optimum self-guidance** and **no recutting** when reversed.

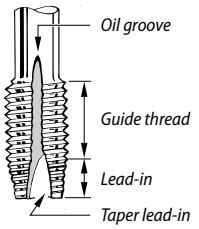
Application: **For Whitworth parallel pipe threads** DIN-ISO 228/1 (threads that do not form a seal within the connection).

13 3325

HSS E ≤ 5/8″ | HSS ≥ 3/4″

13 3327

HSS E-PM



Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	CuZn	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	N						
13 3325		13		15	15	15								6			13	○	●	○			
13 3327		28			23	23	12							11	9				●	●			

inch	11H	13 3325	11L	13 3327	Threads per inch	Thread ∅	L_{tot}			
		Machine tap		GARANT Master Tap INOX machine tap						
		HSS-E vaporised		HSS-E-PM TiAlN		mm	mm	mm	mm	mm
G1/8		XXX		XXX	28	9.73	90	7	5.5	8.8
G1/4		XXX		XXX	19	13.16	100	11	9	11.8
G3/8		XXX		XXX	19	16.66	100	12	9	15.25
G1/2		XXX		XXX	14	20.96	125	16	12	19
G5/8		XXX		XXX	14	22.91	125	18	14.5	21
G3/4		XXX		XXX	14	26.44	140	20	16	24.5
G1		XXX		XXX	11	33.25	160	25	20	30.75

G | 55° | HSS E-PM | DIN 5156 | B 4 | h9 | ≤3×D

GARANT Master Tap through hole machine tap

Universal taps, designed for use in a wide spectrum of materials with high process reliability.

- HSS-E-PM tool material for a high degree of wear resistance.
- Reduced coefficient of friction due to the new high-performance coating.
- Special geometry for optimum swarf evacuation.

Application: **For Whitworth parallel pipe threads** DIN-ISO 228/1 (threads that do not form a seal within the connection).

13 3330

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	GG(G)	CuZn	Uni
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	K	N	
13 3330	30	35	20	30	30	25	12	8						10	8	20	20	●

inches	11I 13 3330 GARANT Master Tap machine tap HSS-E-PM AlTiX	Threads per inch	Thread ∅	L_{tot}			
			mm	mm	mm	mm	mm
G1/16	XXX	28	7.72	90	6	4.9	6.8
G1/8	XXX	28	9.73	90	7	5.5	8.8
G1/4	XXX	19	13.16	100	11	9	11.8
G3/8	XXX	19	16.66	100	12	9	15.25
G1/2	XXX	14	20.96	125	16	12	19
G5/8	XXX	14	22.91	125	18	14.5	21
G3/4	XXX	14	26.44	140	20	16	24.5
G1	XXX	11	33.25	160	25	20	30.75

UNC | 60° | 2B | B 4 | h9 | ≤3×D

DIN 371 ≤ 3/8″ | DIN 376 ≥ 7/16″

Through hole machine tap

With spiral point.

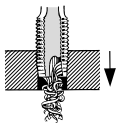
Application: **For UNC uniform coarse threads** ASME – B1.1.

HSS E ≤ 7/8″ | HSS 1″

13 3350

HSS E

13 3352



The spiral point evacuates the swarf in the cutting direction.

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	Graphite GRP CRP	Uni
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	N	
13 3350/3352		13		15	15													● ○

UNC	11H 13 3350 Garant	12H 13 3352 HOLEX	Threads per inch	Thread ∅	L_{tot}					
	Machine tap					13 3350	13 3352	13 3350	13 3352	
				mm	mm	mm	mm	mm	mm	mm
4-40	XXX	XXX	40	2.85	56	3.5	3.5	2.7	2.7	2.35
5-40	XXX	XXX	40	3.18	56	3.5	3.5	2.7	2.7	2.65
6-32	XXX	XXX	32	3.51	56	4	4	3	3	2.85
8-32	XXX	XXX	32	4.17	63	4.5	4.5	3.4	3.4	3.5
10-24	XXX	XXX	24	4.83	70	6	6	4.9	4.9	3.9
12-24	XXX	XXX	24	5.49	80	6	6	4.9	4.9	4.5
1/4-20	XXX	XXX	20	6.35	80	7	7	5.5	5.5	5.1
5/16-18	XXX	XXX	18	7.94	90	8	8	6.2	6.2	6.6
3/8-16	XXX	XXX	16	9.53	100	9	10	7	8	8
7/16-14	XXX	XXX	14	11.11	100	8	8	6.2	6.2	9.4
1/2-13	XXX	XXX	13	12.7	110	9	9	7	7	10.8
5/8-11	XXX	XXX	11	15.88	110	12	12	9	9	13.5
3/4-10	XXX	XXX	10	19.05	125	14	14	11	11	16.5
7/8-9	XXX	XXX	9	22.23	140	18	18	14.5	14.5	19.5
1-8	XXX	XXX	8	25.4	160	20	18	16	14.5	22.25

UNC | 60° | HSS E-PM | 2BX | B 4 | h9 | ≤3×D

DIN 371 ≤ 3/8″ | DIN 376 ≥ 7/16″

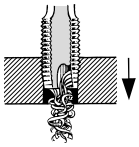
GARANT Master Tap INOX through hole machine tap for stainless and acid-resistant steels

High-performance tap, specially developed for **good process reliability in stainless and acid-resistant steels** and **duplex materials.**

- **HSS-E-PM tool material** for maximum wear resistance
- The latest generation of **TiAlN multi-layer** coating
- **Parameterised flute geometry** for optimum chip formation and **rigidity**

Application: **For UNC uniform coarse threads** ASME – B1.1.

13 3356



The spiral point evacuates the swarf in the cutting direction.

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	Graphite GRP CRP	Uni
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	N	
13 3356		28			23	23	12							11	9			

UNC	13 3356	Threads per inch	Thread ∅	L_{tot}			
	GARANT Master Tap INOX machine tap						
	TiAlN		mm	mm	mm	mm	mm
2-56	XXX	56	2.18	45	2.8	2.1	1.85
4-40	XXX	40	2.85	56	3.5	2.7	2.35
5-40	XXX	40	3.18	56	3.5	2.7	2.65
6-32	XXX	32	3.51	56	4	3	2.85
8-32	XXX	32	4.17	63	4.5	3.4	3.5
10-24	XXX	24	4.83	70	6	4.9	3.9
12-24	XXX	24	5.49	80	6	4.9	4.5
1/4-20	XXX	20	6.35	80	7	5.5	5.1
5/16-18	XXX	18	7.94	90	8	6.2	6.6
3/8-16	XXX	16	9.53	100	9	7	8
7/16-14	XXX	14	11.11	100	8	6.2	9.4
1/2-13	XXX	13	12.7	110	9	7	10.8
5/8-11	XXX	11	15.88	110	12	9	13.5
3/4-10	XXX	10	19.05	125	14	11	16.5
7/8-9	XXX	9	22.23	140	18	14.5	19.5
1-8	XXX	8	25.4	160	18	14.5	22.25

UNC | 60° | HSS E-PM | 2BX | B 4 | h9 | ≤3×D

DIN 371 ≤ 3/8″ | DIN 376 ≥ 1/2″

GARANT Master Tap through hole machine taps

High-performance tap, specially developed for **good process reliability in stainless and acid-resistant steels** and **duplex materials.**

- **HSS-E-PM tool material** for maximum wear resistance
- The latest generation of **TiAlN multi-layer** coating
- **Parameterised flute geometry** for optimum chip formation and **rigidity**

Application: **For UNC uniform coarse threads** ASME – B1.1.

13 3360

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	GG(G)	CuZn	Uni
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	K	N	
13 3360	30	35	20	30	30	25	12	8						10	8	20	20	

UNC	13 3360	Threads per inch	Thread ∅	L_{tot}			
	GARANT Master Tap machine tap						
	AlTiX		mm	mm	mm	mm	mm
2-56	XXX	56	2.18	45	2.8	2.1	1.85
4-40	XXX	40	2.85	56	3.5	2.7	2.35
6-32	XXX	32	3.51	56	4	3	2.85
8-32	XXX	32	4.17	63	4.5	3.4	3.5
10-24	XXX	24	4.83	70	6	4.9	3.9
12-24	XXX	24	5.49	80	6	4.9	4.5
1/4-20	XXX	20	6.35	80	7	5.5	5.1
5/16-18	XXX	18	7.94	90	8	6.2	6.6
3/8-16	XXX	16	9.53	100	10	8	8
1/2-13	XXX	13	12.7	110	9	7	10.8
5/8-11	XXX	11	15.88	110	12	9	13.5
3/4-10	XXX	10	19.05	125	14	11	16.5
7/8-9	XXX	9	22.23	140	18	14.5	19.5

UNF | 60° | 2B | B 4 | h9 | ≤3×D

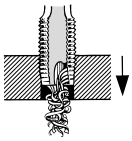
Through hole machine tap

With spiral point.

Application: **For UNF uniform fine threads** ASME – B1.1.

HSS E ≤ 7/8" | HSS 1" | DIN 371 ≤ 1/4" | DIN 374 ≥ 5/16"

13 3400



The spiral point evacuates the swarf in the cutting direction.

HSS E | DIN 374

13 3402

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	Graphite GRP CRP	Uni
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	N	
13 3400/3402		13		15	15													

UNF	11H 13 3400 Garant Machine tap	12H 13 3402 HOLEX Machine tap	Threads per inch	Thread ∅	L_{tot}	13 3400	13 3402	13 3400	13 3402	
				mm	mm	mm	mm	mm	mm	mm
10-32	XXX	XXX	32	4.83	70	6	3.5	4.9	2.7	4.1
12-28	XXX	XXX	28	5.49	80	6	4	4.9	3	4.7
1/4-28	XXX	XXX	28	6.35	80	7	4.5	5.5	3.4	5.5
5/16-24	XXX	XXX	24	7.94	90	6	6	4.9	4.9	6.9
3/8-24	XXX	XXX	24	9.53	100	7	7	5.5	5.5	8.5
7/16-20	XXX	XXX	20	11.11	100	8	8	6.2	6.2	9.9
1/2-20	XXX	XXX	20	12.7	100	9	9	7	7	11.5
5/8-18	XXX	XXX	18	15.88	100	12	12	9	9	14.5
3/4-16	XXX	XXX	16	19.05	110	14	14	11	11	17.5
7/8-14	XXX	XXX	14	22.23	125	18	18	14.5	14.5	20.4
1-12	XXX	XXX	12	25.4	140	20	18	16	14.5	23.25

UNF | 60° | HSS E-PM | 2BX | B 4 | h9 | ≤3×D

DIN 371 ≤ 3/8" | DIN 374 ≥ 7/16"

Garant

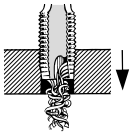
GARANT Master Tap INOX through hole machine tap for stainless and acid-resistant steels

High-performance tap, specially developed for **good process reliability in stainless and acid-resistant steels** and **duplex materials.**

- **HSS-E-PM tool material** for maximum wear resistance
- The latest generation of **TiAlN multi-layer** coating
- **Parameterised flute geometry** for optimum chip formation and **rigidity.**

Application: **For UNF uniform fine threads** ASME – B1.1.

13 3406



The spiral point evacuates the swarf in the cutting direction.

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	Graphite GRP CRP	Uni
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	N	
13 3406		28			23	23	12							11	9			

UNF	11l 13 3406 GARANT Master Tap INOX machine tap HSS-E-PM TiN	Threads per inch	Thread ∅	L_{tot}				
			mm	mm	mm	mm	mm	mm
2-64	XXX	64	2.18	45	2.8	2.1	1.85	
4-48	XXX	48	2.85	56	3.5	2.7	2.4	
5-44	XXX	44	3.18	56	3.5	2.7	2.7	
6-40	XXX	40	3.51	56	4	3	2.95	
8-36	XXX	36	4.17	63	4.5	3.4	3.5	
10-32	XXX	32	4.83	70	6	4.9	4.1	
12-28	XXX	28	5.49	80	6	4.9	4.7	
1/4-28	XXX	28	6.35	80	7	5.5	5.5	
5/16-24	XXX	24	7.94	90	8	6.2	6.9	
3/8-24	XXX	24	9.53	100	9	7	8.5	
7/16-20	XXX	20	11.11	100	8	6.2	9.9	
1/2-20	XXX	20	12.7	100	9	7	11.5	
5/8-18	XXX	18	15.88	100	12	9	14.5	
3/4-16	XXX	16	19.05	110	14	11	17.5	
7/8-14	XXX	14	22.23	125	18	14.5	20.4	
1-12	XXX	12	25.4	140	18	14.5	23.25	

UNF | 60° | HSS E-PM | 2BX | B ↔4↔ | h9 | ≤3×D

DIN 371 ≤3/8" | DIN 374 ≥7/16"

GARANT Master Tap through hole machine taps

Universal taps, designed for use in a wide spectrum of materials with high process reliability.

- HSS-E-PM tool material for a high degree of wear resistance.
- Reduced coefficient of friction due to the new high-performance coating.
- Special geometry for optimum swarf evacuation.

Application: For UNF unified fine threads ASME – B1.1.

13 3410

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	GG(G)	CuZn	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	K	N						
13 3410	30	35	20	30	30	25	12	8						10	8	20	20	●	●	●			

UNF	11l	13 3410	Threads per inch	Thread ∅	L_{tot}			
		GARANT Master Tap machine tap HSS-E-PM AlTiX		mm	mm	mm	mm	mm
10-32		XXX	32	4.83	70	6	4.9	4.1
1/4-28		XXX	28	6.35	80	7	5.5	5.5
5/16-24		XXX	24	7.94	90	8	6.2	6.9
3/8-24		XXX	24	9.53	90	10	8	8.5
7/16-20		XXX	20	11.11	100	8	6.2	9.9
1/2-20		XXX	20	12.7	100	9	7	11.5
9/16-18		XXX	18	14.29	100	11	9	12.9
5/8-18		XXX	18	15.88	100	12	9	14.5
3/4-16		XXX	16	19.05	110	14	11	17.5
7/8-14		XXX	14	22.23	125	18	14.5	20.4

Pg | 80° | DIN 40432 | D ↔4↔ | h9 | ≤3×D

HSS E ≤PG16 | HSS PG21

Steel conduit tap

Application: For use as machine tap or for cleaning existing threads by hand.
For steel conduit threads DIN 40430.

13 3450

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	CuZn	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	N						
13 3450		13		15	15									6			13	○	●	○			

PG	11H	13 3450	Threads per inch	Thread ∅	L_{tot}			
		Steel conduit tap		mm	mm	mm	mm	mm
PG7		XXX	20	12.5	70	9	7	11.4
PG9		XXX	18	15.2	70	12	9	14
PG11		XXX	18	18.6	80	14	11	17.25
PG13,5		XXX	18	20.4	80	16	12	19
PG16		XXX	18	22.5	80	18	14.5	21.25
PG21		XXX	16	28.3	90	20	16	27

TR | 30° | HSS E | Standard | DIN 103 7H | h9 | ≤1.5×D

Synchronous trapezoidal thread machine tap

Profile correct for NC, with divided envelope cut.
Lead chamfer: ≈ 20 turns. **With 25° left-hand flutes**, right-hand cutting.

Advantage: **Suitable for reversing.**

Note: **For use on synchronised spindles.**
The lead must be machine driven.

13 3490

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	GG(G)	CuZn	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	K	N						
13 3490		7		7	5	3								3		7	7	●	●	●			

Tr	11H	13 3490 Machine taps nitrided	L_{tot}				
			mm	mm	mm	mm	mm
TR8×1,5		XXX	1.5	90	6	4.9	6.6
TR10×2		XXX	2	110	7	5.5	8.2
TR10×3		XXX	3	130	7	5.5	7.25
TR12×3		XXX	3	140	9	7	9.25
TR14×3		XXX	3	145	10	8	11.25

Tr	11H	13 3490 Machine taps nitrided	L_{tot}				
			mm	mm	mm	mm	mm
TR14×4		XXX	4	165	10	8	10.25
TR16×4		XXX	4	190	12	9	12.25
TR18×4		XXX	4	195	14	11	14.25
TR20×4		XXX	4	195	16	12	16.25
TR24×5		XXX	5	245	18	14.5	19.25

EG-M | 60° | HSS E-PM | DIN 40435 | 6H mod. | B 4 | h9 | ≤3×D

Through hole machine tap for wire thread inserts

Tap to **DIN 40435** (similar to DIN 371 / DIN 376).
Achieves outstanding tool life, due to high-quality substrate and TiCN coating.
For wide application range of different materials.

Application: For production of AC mounting thread to metric ISO threads **DIN 8140** for **STI** (Screw Thread Insert) wire thread inserts.

Note: Please ensure without fail the correct **tapping drill Ø** (see table)**!**

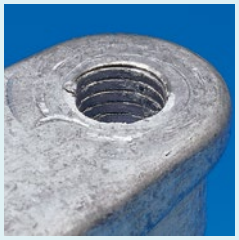
13 3550

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	CuZn	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	N						
13 3550		15		20	18	15	10							10			15	●		●	●		

EG-M	11H	13 3550 Machine tap for wire thread inserts HSS-E-PM TiCN	L_{tot}				
			mm	mm	mm	mm	mm
EG-M3		XXX	0.5	63	4.5	3.4	3.15
EG-M4		XXX	0.7	70	6	4.9	4.2
EG-M5		XXX	0.8	80	6	4.9	5.25
EG-M6		XXX	1	90	8	6.2	6.3

EG-M	11H	13 3550 Machine tap for wire thread inserts HSS-E-PM TiCN	L_{tot}				
			mm	mm	mm	mm	mm
EG-M8		XXX	1.25	100	10	8	8.4
EG-M10		XXX	1.5	100	9	7	10.5
EG-M12		XXX	1.75	110	11	9	12.5
EG-M16		XXX	2	125	14	11	16.5

Thread inserts and thread repairs



Wire thread inserts allow high-security fastenings even in low-strength metallic materials.
HELICOIL PLUS thread inserts are highly precise, corro-sion-resistant and extremely capable of withstanding high temperatures.

Thread inserts and tools for thread repairs can be found in the Hoffmann Group Catalogue „Hand Tools and Metrology" from No. 08 2800.

M | 60° | HSS E | DIN 371 | DIN 13 | ISO 2 6H | C 3 | 40° | h9 | ≤3×D

Blind hole machine tap

Two spiral flutes with **polished** chip space.

Advantage: Reliable swarf evacuation, due to the high helix angle and wide flutes.

Application: **Suitable for tensile strength up to maximum 300 N/mm².**

13 4200

Suitable for/ v_c [m/min]	Alu	Alu	PMMA acrylic	PE-HD	PA 66	PEEK	PF 31	AFRP aramid	PVDF GF20	POM GF25	PA 66 GF30	PEEK GF30	PTFE CF25	PEEK CF30	Hybrid	Honey-comb sandwich	MMC	GRP					
ISO code	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N					
13 4200	13	13	30			30													●	○			

M	1H	13 4200 Machine taps	mm	L_{tot} mm	mm	mm	mm
M2		XXX	0.4	45	2.8	2.1	1.6
M2,5		XXX	0.45	50	2.8	2.1	2.05
M3		XXX	0.5	56	3.5	2.7	2.5
M4		XXX	0.7	63	4.5	3.4	3.3
M5		(XXX)	0.8	70	6	4.9	4.2
M6		XXX	1	80	6	4.9	5
M8		XXX	1.25	90	8	6.2	6.8
M10		XXX	1.5	100	10	8	8.5

M | 60° | DIN 13 | ISO 2 6H | C 3 | 40° | h9

Blind hole machine tap

13 4250 – **Vaporised surface.** Reduces edge build-up.

13 4270 – **Hard chrome-plated surface** for reduced edge build-up and increased tool life.

13 4655 – **With extra long shank.**

Special **TiAlN coating**, highly suitable for **aluminium alloys.**

All sizes: Shank to DIN 376 (= shank Ø relieved), outstandingly suitable for use up to great depths.

Advantage:

13 4655 – Designed **for tapping threads where access is difficult.**

Application:

13 4270/4655 – Suitable for materials with tensile strength **up to maximum 450N/mm².**

13 4250

HSS E | DIN 371 | DIN 376 | ≤3×D

≤ M10 | ≥ M12

13 4270

HSS E-PM | DIN 371 | DIN 376 | ≤2×D

≤ M10 | ≥ M12

13 4655

HSS E-PM | Standard | ≤3×D

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	CuZn	Graphite GRP CRP					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	N	N					
13 4250	13	13		15													13		●	●			
13 4270/4655	28	28	23	27													28		●	●			

M	1H	13 4250	1H	13 4270	1H	13 4655 Machine tap	mm	L_{tot} 13 4250 13 4270 mm	L_{tot} 13 4655 mm	13 4250 13 4270 mm	13 4655 mm	13 4250 13 4270 mm	13 4655 mm	mm
		HSS-E vaporised		HSS-E-PM Hard chrome		extra long HSS-E-PM TiAlN								
M1,6		(XXX)		(XXX)		–	0.35	40	–	2.5	–	2.1	–	1.25
M2		(XXX)		(XXX)		–	0.4	45	–	2.8	–	2.1	–	1.6
M2,5		(XXX)		(XXX)		–	0.45	50	–	2.8	–	2.1	–	2.05
M3		(XXX)		(XXX)		–	0.5	56	–	3.5	–	2.7	–	2.5
M4		(XXX)		(XXX)		(XXX)	0.7	63	112	4.5	2.8	3.4	2.1	3.3
M5		(XXX)		(XXX)		(XXX)	0.8	70	125	6	3.5	4.9	2.7	4.2
M6		(XXX)		(XXX)		(XXX)	1	80	125	6	4.5	4.9	3.4	5
M8		(XXX)		(XXX)		XXX	1.25	90	140	8	6	6.2	4.9	6.8
M10		(XXX)		(XXX)		XXX	1.5	100	160	10	7	8	5.5	8.5
M12		(XXX)		(XXX)		XXX	1.75	110	180	9	9	7	7	10.2
M14		(XXX)		(XXX)		–	2	110	–	11	–	9	–	12
M16		(XXX)		(XXX)		(XXX)	2	110	220	12	12	9	9	14
M18		(XXX)		–		–	2.5	125	–	14	–	11	–	15.5
M20		(XXX)		(XXX)		XXX	2.5	140	280	16	16	12	12	17.5
M24		(XXX)		–		–	3	160	–	18	–	14.5	–	21

M | 60° | HSS E-PM | Standard | DIN 13 | ISO 2X 6HX | 40° | h6 DIN 1835 B | ≤2.5×D

Garant

Synchronised blind hole machine tap with internal coolant supply

Sturdy version with right-hand helix and shank to DIN 1835-B. Special geometry for use on machines with **synchronised spindle drives.** The tap is controlled by the synchronising spindle of the machine. With the latest generation of special **DLC coating sp²** for optimum tool life. For use with **emulsion** (fat content minimum 8%).

13 4280 – **Form E** (lead chamfer: 1.5 - 2 turns) for the deepest possible thread depths.

13 4285 – With **internal coolant supply** for maximum tool life.

Note: **For use on synchronised spindles,** the **GARANT** quick-change tapping chuck **No. 338100 – 338121 with minimum length adjustment (MLA)** ensures maximum process reliability.

13 4275

13 4280

13 4285

Suitable for/ v_c [m/min]	Alu	Alu	Alu cast > 10 % Si	PMMA acrylic	PE-HD	PA 66	PEEK	PF 31	AFRP aramid	PVDF GF20	POM GF25	PA 66 GF30	PEEK GF30	PTFE CF25	PEEK CF30	Hybrid	Cu	CuZn					
ISO code	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N					
13 4275–13 4285	30	35	20	25								20		25			55	35		●	●		●

M	11H 13 4275	11H 13 4280	11H 13 4285					
	Machine tap for synchronised spindles							
	HSS-E-PM Form C DLC	HSS-E-PM Form E DLC	HSS-E-PM IC / Form C DLC		L_{tot}			
				mm	mm	mm	mm	mm
M2,5	XXX	XXX	–	0.45	70	6	4.9	2.05
M3	XXX	XXX	–	0.5	70	6	4.9	2.5
M4	XXX	XXX	–	0.7	70	6	4.9	3.3
M5	XXX	XXX	XXX	0.8	70	6	4.9	4.2
M6	XXX	XXX	XXX	1	80	6	4.9	5
M8	XXX	XXX	XXX	1.25	90	8	6.2	6.8
M10	XXX	XXX	XXX	1.5	100	10	8	8.5
M12	XXX	XXX	XXX	1.75	110	12	9	10.2
M16	XXX	XXX	XXX	2	110	12	9	14

Garant

Synchronous tap

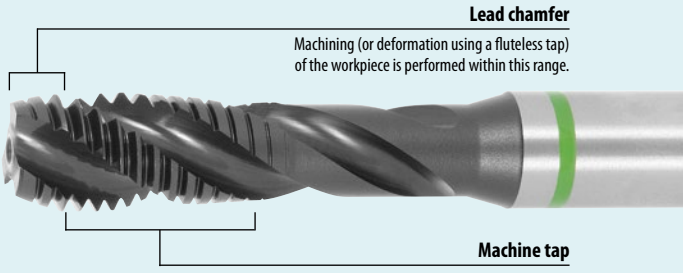
Process reliability in the thread production

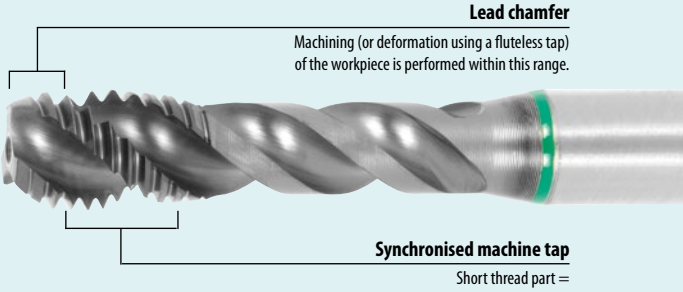
Tapping often takes place at the end of a production process.
This operation is thus critical for the quality of the workpiece.
Defective threads generally give rise to significant additional costs.
Process reliability thus takes absolute priority. However **short cycle times** and **economic production processes** must also be considered.

Special features of a synchronous tap:
Due to the short guide part of the synchronous machine tap the frictional resistance between tool and workpiece is reduced.
This significantly increases the **process reliability** for thread tapping.

The axial guidance is therefore provided by the machine.
This assumes rigid clamping of the tool or **the use of our GARANT** quick-change tapping chuck **No. 33 8100 – 33 8121 with minimum length compensation (MLA)** .

Caution:
Because the tool is rigidly clamped using a Weldon arbor, shrink-fit chuck or collet chuck, the **spindle speed** must be synchronised with the **advance of the axis.**





M | 60° | DIN 13 | ISO 2 6H | D ←4→ | 15-20° | h9 | ≤2×D

HSS E ≤ M24 | HSS ≥ M24 | DIN 371 ≤ M11 | DIN 376 ≥ M12

Garant

Blind hole machine tap

Sturdy design, with 15 – 20° right-hand helix.
Size M2.6 has the old DIN profile.

13 4600

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	Graphite GRP CRP	Uni
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	N	
13 4600		13		**15**	**15**													

M	11H 13 4600 Machine taps		L_{tot}			
		mm	mm	mm	mm	mm
M2	XXX	0.4	45	2.8	2.1	1.6
M2,2	XXX	0.45	45	2.8	2.1	1.75
M2,5	XXX	0.45	50	2.8	2.1	2.05
M2,6	XXX	0.45	50	2.8	2.1	2.1
M3	XXX	0.5	56	3.5	2.7	2.5
M3,5	XXX	0.6	56	4	3	2.9
M4	XXX	0.7	63	4.5	3.4	3.3
M4,5	XXX	0.75	70	6	4.9	3.7
M5	XXX	0.8	70	6	4.9	4.2
M6	XXX	1	80	6	4.9	5
M7	XXX	1	80	7	5.5	6
M8	XXX	1.25	90	8	6.2	6.8

M	11H 13 4600 Machine taps		L_{tot}			
		mm	mm	mm	mm	mm
M9	XXX	1.25	90	9	7	7.8
M10	XXX	1.5	100	10	8	8.5
M11	XXX	1.5	100	11	9	9.5
M12	XXX	1.75	110	9	7	10.2
M14	XXX	2	110	11	9	12
M16	XXX	2	110	12	9	14
M18	XXX	2.5	125	14	11	15.5
M20	XXX	2.5	140	16	12	17.5
M24	XXX	3	160	18	14.5	21
M27	XXX	3	160	20	16	24
M30	XXX	3.5	180	22	18	26.5

M | 60° | DIN 13 | ISO 2 6H | C ←3→ | 40° | h9 | ≤3×D

Garant

Blind hole machine tap

13 4620 – **HSS-E-PM steel for high wear resistance** and **strong right-hand chip flutes,** for optimum chip evacuation.

13 4660 – **With extra long shank.**
≤ M10: Shank **to DIN 371;**
≥ M12: Shank **to DIN 376.**

Advantage:

13 4660 – Designed **for tapping threads where access is difficult.**

13 4620

HSS E-PM | DIN 371 ≤ M10 | DIN 376 ≥ M12

134660

HSS E | Standard

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	Uni
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	K	
13 4620		15		**18**	**18**	**18**	9											
13 4660		13		**15**	**15**												9	○

M	11H 13 4620 / 11H 13 4660 Machine taps		L_{tot}					
	HSS-E-PM	extra long HSS-E	13 4620	13 4660				
			mm	mm	mm	mm	mm	mm
M3	XXX	XXX	0.5	56	112	3.5	2.7	2.5
M4	XXX	XXX	0.7	63	112	4.5	3.4	3.3
M5	XXX	XXX	0.8	70	125	6	4.9	4.2
M6	XXX	XXX	1	80	125	6	4.9	5
M8	XXX	XXX	1.25	90	140	8	6.2	6.8

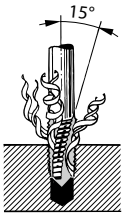
M	11H 13 4620 / 11H 13 4660 Machine taps		L_{tot}					
	HSS-E-PM	extra long HSS-E	13 4620	13 4660				
			mm	mm	mm	mm	mm	mm
M10	XXX	XXX	1.5	100	160	10	8	8.5
M12	XXX	XXX	1.75	110	180	9	7	10.2
M16	XXX	XXX	2	110	220	12	9	14
M20	XXX	XXX	2.5	140	280	16	12	17.5

M | 60° | HSS E | DIN 352 | DIN 13 | ISO 2 6H | C ↔3↔ | 15-20° | h9 | ≤2×D

Garant

Blind hole machine tap stub

The **short shank projects less and hence is more stable.**



13 4650

The right-hand flutes evacuate the swarf upwards out of the blind hole.

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	Graphite GRP CRP	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	N						
13 4650		13		15	15														●	○			

M	11H 13 4650 Machine taps short		L_{tot}			
		mm	mm	mm	mm	mm
M3	XXX	0.5	40	3.5	2.7	2.5
M4	XXX	0.7	45	4.5	3.4	3.3
M5	XXX	0.8	50	6	4.9	4.2
M6	XXX	1	50	6	4.9	5

M	11H 13 4650 Machine taps short		L_{tot}			
		mm	mm	mm	mm	mm
M8	XXX	1.25	56	6	4.9	6.8
M10	XXX	1.5	70	7	5.5	8.5
M12	XXX	1.75	75	9	7	10.2

M | 60° | DIN 13 | ISO 2 6H | C ↔3↔ | 40° | h9 | ≤3×D

Blind hole machine tap

13 4980 – **All sizes = DIN 376 (= shank Ø relieved)** – for greater tapping depths.

13 5100 – Applicable with higher cutting speeds and **emulsion** (fat content minimum 8 %) due to improved wear resistance.

HSS E	HSS	DIN 371	DIN 376
≤ M24	≥ M27	≤ M10 except for 13 4980	≥ M12

13 4851

13 4980

13 5100

13 5250

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	CuZn					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	K	N					
13 4851/4980/5250		13		15	15	15											9	13	●	○			
13 5100		16		20	19	19											14	16	●	●			

M	11H 13 4851	11H 13 4980 Garant	11H 13 5100	12H 13 5250 HOLEX		L_{tot}	13 4851 13 5100 13 5250	13 4980	13 4851 13 5100 13 5250	13 4980	
	Machine taps	DIN 376			mm	mm	mm	mm	mm	mm	mm
	vaporised	vaporised	TiN	vaporised							
M2	XXX	–	–	–	0.4	45	2.8	–	2.1	–	1.6
M2,5	XXX	–	–	–	0.45	50	2.8	–	2.1	–	2.05
M3	XXX	XXX	XXX	XXX	0.5	56	3.5	2.2	2.7	–	2.5
M4	XXX	XXX	XXX	XXX	0.7	63	4.5	2.8	3.4	2.1	3.3
M5	XXX	XXX	XXX	XXX	0.8	70	6	3.5	4.9	2.7	4.2
M6	XXX	XXX	XXX	XXX	1	80	6	4.5	4.9	3.4	5
M8	XXX	XXX	XXX	XXX	1.25	90	8	6	6.2	4.9	6.8
M10	XXX	XXX	XXX	XXX	1.5	100	10	7	8	5.5	8.5
M12	XXX	–	XXX	XXX	1.75	110	9	–	7	–	10.2
M14	XXX	–	XXX	–	2	110	11	–	9	–	12
M16	XXX	–	XXX	XXX	2	110	12	–	9	–	14
M18	XXX	–	–	–	2.5	125	14	–	11	–	15.5
M20	XXX	–	XXX	–	2.5	140	16	–	12	–	17.5
M22	XXX	–	–	–	2.5	140	18	–	14.5	–	19.5
M24	XXX	–	–	–	3	160	18	–	14.5	–	21
M27	XXX	–	–	–	3	160	20	–	16	–	24
M30	XXX	–	–	–	3.5	180	22	–	18	–	26.5

M | 60° | HSS E | DIN 13 | ISO 2 6H | C 3 | 40° | h9 | ≤3×D

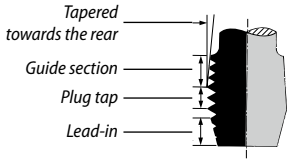
DIN 371 ≤ M10 | DIN 376 ≥ M12

Garant

Blind hole machine tap

With conically offset guide thread (3 – 4 full threads, then tapered towards the rear).
Particularly for recessed blind hole threads where the swarf generated remains in the tap flutes.
Advantage: The tapered guide section allows the tap to be reversed with greatly reduced risk of chips jamming and causing damage to the tap.

13 5150



Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	CuZn					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	K	N					
13 5150		13		15	15	15											9	13	●	○			

M	1H	13 5150 Machine taps vaporised	mm	L_{tot} mm	mm	mm	mm
M2		XXX	0.4	45	2.8	2.1	1.6
M3		XXX	0.5	56	3.5	2.7	2.5
M4		XXX	0.7	63	4.5	3.4	3.3
M5		XXX	0.8	70	6	4.9	4.2
M6		XXX	1	80	6	4.9	5
M8		XXX	1.25	90	8	6.2	6.8

M	1H	13 5150 Machine taps vaporised	mm	L_{tot} mm	mm	mm	mm
M10		XXX	1.5	100	10	8	8.5
M12		XXX	1.75	110	9	7	10.2
M14		XXX	2	110	11	9	12
M16		XXX	2	110	12	9	14
M20		XXX	2.5	140	16	12	17.5

M | 60° | HSS E | DIN 13 | ISO 2 6H | C 3 | 40° | h9 | ≤2×D

Garant

Blind hole machine tap

With strong right-hand chip flutes, for optimum swarf evacuation.
13 5370 – Improved wear characteristics due to optimised HSS-E tool material
13 5320/5370 – For use with **emulsion** (fat content minimum 8%).
Recommendation: For **TOOLOX materials we recommend deviating from the DIN data** (see table) by drilling the tapping hole ∅ **0.05** to **0.3 mm** larger.

13 5300

DIN 371 ≤ M10 | DIN 376 ≥ M12

13 5320

DIN 371 ≤ M10 | DIN 376 ≥ M12

13 5370

DIN 371 ≤ M12 | DIN 376 ≥ M14

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	TOOLOX® 33 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	Graphite GRP CRP					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	H	M	M	S	N					
13 5300				15	15	15	6							3					●	○			
13 5320				20	19	19	9							3					●	●			
13 5370					19	19	9	4						3					●	●			

M	1H	13 5300 Machine tap vaporised	1H	13 5320 TiCN	1H	13 5370 TiCN	mm	L_{tot} mm	13 5300 13 5320 mm	13 5370 mm	13 5300 13 5320 mm	13 5370 mm	mm
M2		XXX		–		–	0.4	45	2.8	–	2.1	–	1.6
M3		XXX		XXX		XXX	0.5	56	3.5	3.5	2.7	2.7	2.5
M4		XXX		XXX		XXX	0.7	63	4.5	4.5	3.4	3.4	3.3
M5		XXX		XXX		XXX	0.8	70	6	6	4.9	4.9	4.2
M6		XXX		XXX		XXX	1	80	6	6	4.9	4.9	5
M8		XXX		XXX		XXX	1.25	90	8	8	6.2	6.2	6.8
M10		XXX		XXX		XXX	1.5	100	10	10	8	8	8.5
M12		XXX		XXX		XXX	1.75	110	9	12	7	9	10.2
M14		XXX		XXX		XXX	2	110	11	11	9	9	12
M16		XXX		XXX		XXX	2	110	12	12	9	9	14
M20		XXX		XXX		XXX	2.5	140	16	16	12	12	17.5
M24		XXX		XXX		XXX	3	160	18	18	14.5	14.5	21

M | 60° | HSS E-PM | DIN 13 | ISO 2 6H | C 3 | h9

Garant

Blind hole machine tap for problem materials

For use with **emulsion** (fat content minimum 8%).

13 5375 – For use with **emulsion** (fat content minimum 8%).

13 5378 – For use with **emulsion** (fat content minimum 8%).

Recommendation: For **TOOLOX** and **HARDOX materials** we recommend **deviating from the DIN** data (see table) by drilling the tapping hole ∅ **0.05** to **0.3 mm** larger.

13 5375

DIN 371 | DIN 376 | 40° | ≤3×D

≤ M10 | ≥ M12

13 5378

DIN 371 | DIN 376 | 25° | ≤2×D

≤ M12 | ≥ M14

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	TOOLOX® 33 HRC	TOOLOX® 44 HRC	HARDOX® 500 < 1600 N	INOX < 900 N	INOX > 900 N	Ti > 850 N	CuZn					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	H	M	M	S	N					
13 5375				27	23	23	13	10				12					5		●	●			
13 5378							9	7				6	3	2	9	7		7	●	●			

M	1H 13 5375 Machine tap HSS-E-PM TiN / vaporised	1H 13 5378 Machine tap HSS-E-PM TiN	mm	L_{tot} mm	13 5375 mm	13 5378 mm	13 5375 mm	13 5378 mm	mm
M3	–	XXX	0.5	56	–	3.5	–	2.7	2.5
M4	XXX	XXX	0.7	63	4.5	4.5	3.4	3.4	3.3
M5	XXX	XXX	0.8	70	6	6	4.9	4.9	4.2
M6	XXX	XXX	1	80	6	6	4.9	4.9	5
M8	XXX	XXX	1.25	90	8	8	6.2	6.2	6.8
M10	XXX	XXX	1.5	100	10	10	8	8	8.5
M12	XXX	XXX	1.75	110	9	12	7	9	10.2
M14	XXX	XXX	2	110	11	11	9	9	12
M16	XXX	XXX	2	110	12	12	9	9	14
M20	XXX	XXX	2.5	140	16	16	12	12	17.5
M24	XXX	–	3	160	18	–	14.5	–	21
M27	XXX	–	3	160	20	–	16	–	24
M30	XXX	–	3.5	180	22	–	18	–	26.5

M | 60° | HSS E-PM | Standard | DIN 13 | ISO 2X 6HX | 40° | h6 DIN 1835 B | ≤2.5×D

Garant

Synchronised blind hole machine tap with internal coolant supply

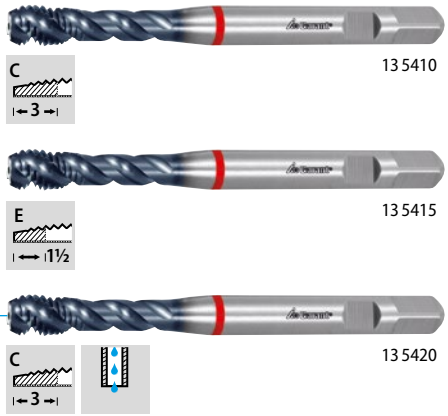
Sturdy version with right-hand helix and shank to DIN 1835-B. Special geometry for use on machines with **synchronised spindle drives.** The tap is guided by the synchronised spindle on the machine. Special **TiAlN-S coating** for optimum tool life. For use with **emulsion** (fat content minimum 8%).

13 5415 – **Form E** (lead chamfer: 1.5 - 2 turns) for the deepest possible thread depths.

13 5420 – With **internal coolant supply** for maximum tool life.

Recommendation: For **TOOLOX materials** we recommend **deviating from the DIN** data (see table) by drilling the tapping hole ∅ **0.05 to 0.3mm** larger.

Note:	**For use on synchronised spindles,** the **GARANT** quick-change tapping chuck **No. 338100 – 338121 with minimum length adjustment (MLA)** ensures very high process reliability.



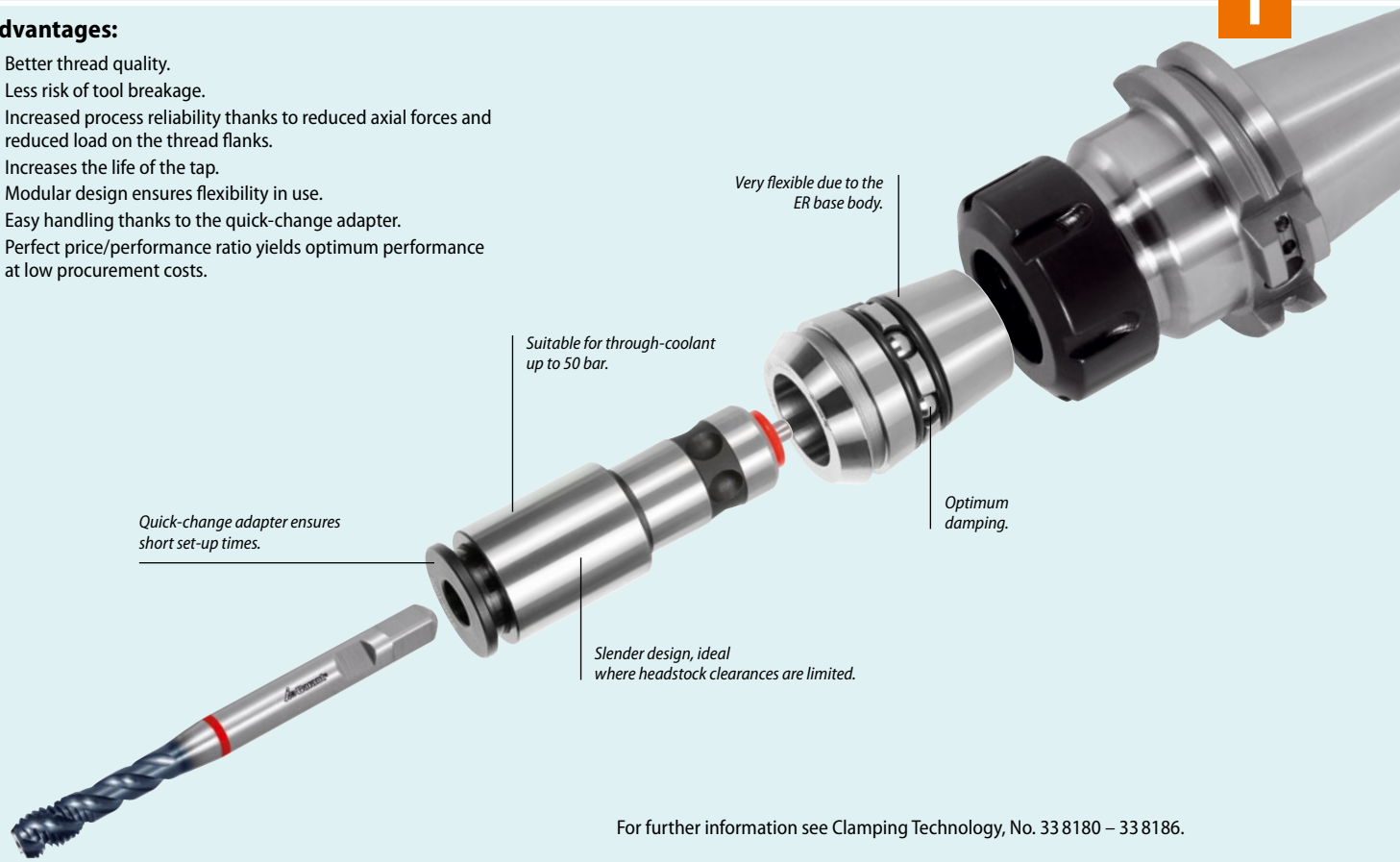
Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	TOOLOX® 33 HRC	TOOLOX® 44 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	H	H	M	M	S
13 5410–13 5420					32	20	12	7						7	3			

M	11H 13 5410	11H 13 5415	11H 13 5420					
	Machine tap for synchronised spindles							
	HSS-E-PM Form C	HSS-E-PM Form E	HSS-E-PM IC / Form C					
	TiAlN	TiAlN	TiAlN	mm	mm	mm	mm	mm
M3	XXX	XXX	–	0.5	70	6	4.9	2.5
M4	XXX	XXX	–	0.7	70	6	4.9	3.3
M5	XXX	XXX	XXX	0.8	70	6	4.9	4.2
M6	XXX	XXX	XXX	1	80	6	4.9	5
M8	XXX	XXX	XXX	1.25	90	8	6.2	6.8
M10	XXX	XXX	XXX	1.5	100	10	8	8.5
M12	XXX	XXX	XXX	1.75	110	12	9	10.2
M16	XXX	XXX	XXX	2	110	12	9	14

Synchro insert with ER collet base body

Advantages:

- Better thread quality.
- Less risk of tool breakage.
- Increased process reliability thanks to reduced axial forces and reduced load on the thread flanks.
- Increases the life of the tap.
- Modular design ensures flexibility in use.
- Easy handling thanks to the quick-change adapter.
- Perfect price/performance ratio yields optimum performance at low procurement costs.



For further information see Clamping Technology, No. 33 8180 – 33 8186.

M | 60° | DIN 13 | C ↔3↔ | 40° | h9 | ≤2×D

HSS E ≤ M24 | HSS M30 | DIN 371 ≤ M10 | DIN 376 ≥ M12

Garant

Blind hole machine tap for stainless steels

13 5450 – Size M2.6 to the old DIN profile.

13 5550 – **With conically offset guide thread.**
Particularly for recessed blind hole threads where the swarf generated remains in the tap flutes.

13 5600 – **Tolerance class ISO 3 / 6G** = with oversize approx. 0.02 – 0.04 mm.

Application:

13 5600 – For components which are **galvanised** after threading or shrink slightly when hardened.

13 5450

ISO 2 6H

13 5550

ISO 2 6H

13 5600

ISO 3 6G

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	CuZn	Graphite GRP CRP
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	N	N
13 5450–13 5600		13		15	15	15								6			13	

M	1H 13 5450	1H 13 5550	1H 13 5600					
	Machine tap							
		tapered	6G					
	vaporised	vaporised	vaporised	mm	mm	mm	mm	mm
M2	XXX	–	XXX	0.4	45	2.8	2.1	1.6
M2,5	XXX	–	XXX	0.45	50	2.8	2.1	2.05
M2,6	XXX	–	–	0.45	50	2.8	2.1	2.1
M3	XXX	XXX	XXX	0.5	56	3.5	2.7	2.5
M4	XXX	XXX	XXX	0.7	63	4.5	3.4	3.3
M5	XXX	XXX	XXX	0.8	70	6	4.9	4.2
M6	XXX	XXX	XXX	1	80	6	4.9	5
M8	XXX	XXX	XXX	1.25	90	8	6.2	6.8
M10	XXX	XXX	XXX	1.5	100	10	8	8.5
M12	XXX	XXX	XXX	1.75	110	9	7	10.2
M14	XXX	XXX	XXX	2	110	11	9	12
M16	XXX	XXX	XXX	2	110	12	9	14
M18	XXX	–	–	2.5	125	14	11	15.5
M20	XXX	XXX	XXX	2.5	140	16	12	17.5
M24	XXX	–	–	3	160	18	14.5	21
M30	XXX	–	–	3.5	180	22	18	26.5

M | 60° | HSS E | DIN 13 | ISO 2 6H | C ↔3↔ | 40° | h9 | ≤2×D

DIN 371 ≤ M10 | DIN 376 ≥ M12

Garant

Blind hole machine tap for stainless and acid-resistant steels

Parallel offset guide thread.

Advantage: This allows the tap to be reversed with little risk of chips jamming and causing damage to the tap.

13 5650

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	CuZn	Graphite GRP CRP
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	N	N
13 5650		13		15	15	15								6	4		13	

M	1H 13 5650					
	Machine taps					
	vaporised	mm	mm	mm	mm	mm
M2	XXX	0.4	45	2.8	2.1	1.6
M2,5	XXX	0.45	50	2.8	2.1	2.05
M3	XXX	0.5	56	3.5	2.7	2.5
M4	XXX	0.7	63	4.5	3.4	3.3
M5	XXX	0.8	70	6	4.9	4.2
M6	XXX	1	80	6	4.9	5

M	1H 13 5650					
	Machine taps					
	vaporised	mm	mm	mm	mm	mm
M8	XXX	1.25	90	8	6.2	6.8
M10	XXX	1.5	100	10	8	8.5
M12	XXX	1.75	110	9	7	10.2
M16	XXX	2	110	12	9	14
M20	XXX	2.5	140	16	12	17.5
M24	XXX	3	160	18	14.5	21

M | 60° | HSS E-PM | DIN 13 | 45° | h9 | ≤2.5×D

GARANT Master Tap INOX blind hole machine tap for stainless and acid-resistant steels

High-performance tap, specially developed for **good process reliability in stainless and acid-resistant steels** and **duplex materials.**
The 45° helix angle of the flutes facilitates chip formation especially in ductile austenitic CrNi steels.

- **HSS-E-PM tool material** for a high degree of wear resistance
- The latest generation of **TiALN multi-layer coating**
- **Parameterised flute geometry** for optimum chip formation and **torsional stiffness**

13 5734 – With internal coolant supply
13 5736 – Form E (lead chamfer: 1.5 - 2 turns).
13 5737 – Tolerance class ISO 3X/6GX. For components which are galvanised or shrink slightly when hardened.
13 5739 – With extra long shank.

13 5739 Size M3–M10 – Shank to DIN 371.
13 5739 Size M12–M24 – Shank to DIN 376.

Advantage:
13 5739 – Designed for tapping threads where access is difficult.

13 5732

DIN 371 | DIN 376 | ISO 2X 6HX | C, 3
≤ M10 | ≥ M12

13 5734

DIN 371 | DIN 376 | ISO 2X 6HX | C, 3
≤ M10 | ≥ M12

13 5736

DIN 371 | DIN 376 | ISO 2X 6HX | E, 1½
≤ M10 | ≥ M12

13 5737

DIN 371 | DIN 376 | ISO 3X 6GX | C, 3
≤ M10 | ≥ M12

13 5739

Standard | ISO 2X 6HX | C, 3

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	Graphite GRP CRP	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	N						
13 5732–13 5737		28			23	23	12							11	9				●	●			
13 5739		20			16	16	8							7	6				●	●			

M	13 5732	13 5734	13 5736	13 5737	13 5739					
	GARANT Master Tap INOX machine tap									
	HSS-E-PM Form C 6HX	HSS-E-PM IC / Form C 6HX	HSS-E-PM Form E 6HX	HSS-E-PM Form C 6GX	extra long HSS-E-PM Form C 6HX		L_{tot}			
	TiAlN	TiAlN	TiAlN	TiAlN	TiAlN	mm	13 5732 13 5734 13 5736 13 5737 mm	13 5739 mm	mm	mm	mm
M1,6	XXX	–	–	–	–	0.35	40	–	2.5	2.1	1.25
M2	XXX	–	XXX	XXX	–	0.4	45	–	2.8	2.1	1.6
M2,5	XXX	–	–	–	–	0.45	50	–	2.8	2.1	2.05
M2,6	XXX	–	–	–	–	0.45	50	–	2.8	2.1	2.1
M3	XXX	–	XXX	XXX	XXX	0.5	56	112	3.5	2.7	2.5
M4	XXX	–	XXX	XXX	XXX	0.7	63	126	4.5	3.4	3.3
M5	XXX	–	XXX	XXX	XXX	0.8	70	140	6	4.9	4.2
M6	XXX	XXX	XXX	XXX	XXX	1	80	160	6	4.9	5
M8	XXX	XXX	XXX	XXX	XXX	1.25	90	180	8	6.2	6.8
M10	XXX	XXX	XXX	XXX	XXX	1.5	100	200	10	8	8.5
M12	XXX	XXX	XXX	XXX	XXX	1.75	110	220	9	7	10.2
M14	XXX	XXX	XXX	XXX	XXX	2	110	220	11	9	12
M16	XXX	XXX	XXX	XXX	XXX	2	110	220	12	9	14
M20	XXX	XXX	XXX	XXX	XXX	2.5	140	280	16	12	17.5
M24	XXX	XXX	XXX	XXX	XXX	3	160	300	18	14.5	21

M | 60° | HSS E-PM | Standard | DIN 13 | ISO 2X 6HX | 40° | h6 DIN 1835 B | ≤2.5×D

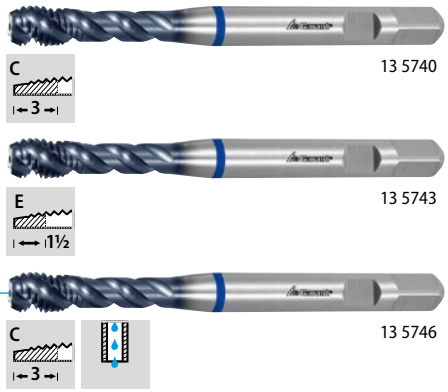
Garant

Synchronised blind hole machine tap with internal coolant supply

Sturdy version with right-hand helix and shank to DIN 1835-B. Special geometry for use on machines with **synchronised spindle drives.** The tap is controlled by the synchronising spindle of the machine.
Special **TiAlN coating** for optimum tool life. For use with **emulsion** (fat content minimum 8%).

13 5743 – **Form E** (lead chamfer: 1.5 - 2 turns) for the deepest possible thread depths.
13 5746 – With **internal coolant supply** for maximum tool life.

Note: **For use on synchronised spindles,** the **GARANT** quick-change tapping chuck **No. 338100 – 338121 with minimum length adjustment (MLA)** ensures very high process reliability.



Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	CuZn	Uni
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	N	
13 5740–13 5746		32			32	20								11	9		30	○

M	11H 13 5740	11H 13 5743	11H 13 5746					
	Machine tap for synchronised spindles							
	HSS-E-PM Form C	HSS-E-PM Form E	HSS-E-PM IC / Form C					
	TiAlN	TiAlN	TiAlN	mm	mm	mm	mm	mm
M2,5	XXX	XXX	–	0.45	70	6	4.9	2.05
M3	XXX	XXX	–	0.5	70	6	4.9	2.5
M4	XXX	XXX	–	0.7	70	6	4.9	3.3
M5	XXX	XXX	XXX	0.8	70	6	4.9	4.2
M6	XXX	XXX	XXX	1	80	6	4.9	5
M8	XXX	XXX	XXX	1.25	90	8	6.2	6.8
M10	XXX	XXX	XXX	1.5	100	10	8	8.5
M12	XXX	XXX	XXX	1.75	110	12	9	10.2
M16	XXX	XXX	XXX	2	110	12	9	14

M | 60° | HSS E-PM | DIN 13 | ISO 2X 6HX | C 3 | 15° | h9 | ≤2×D

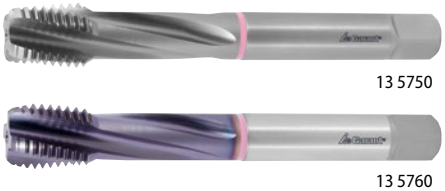
DIN 371 ≤ M12 | DIN 376 ≥ M14

Garant

Blind hole machine tap

Sturdy design, with 15° right-hand chip flutes.

13 5760 – For use with **emulsion** (fat content minimum 8%).



Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	Graphite GRP CRP	Uni
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	N	
13 5750						18	9	3								4		
13 5760						23	13	7								5		

M	11H 13 5750	11H 13 5760					
	Machine tap HSS-E-PM						
	nitrided	TiCN	mm	mm	mm	mm	mm
M2	XXX	XXX	0.4	45	2.8	2.1	1.6
M2,5	XXX	XXX	0.45	50	2.8	2.1	2.05
M3	XXX	XXX	0.5	56	3.5	2.7	2.5
M3,5	XXX	XXX	0.6	56	4	3	2.9
M4	XXX	XXX	0.7	63	4.5	3.4	3.3
M5	XXX	XXX	0.8	70	6	4.9	4.2
M6	XXX	XXX	1	80	6	4.9	5
M8	XXX	XXX	1.25	90	8	6.2	6.8
M10	XXX	XXX	1.5	100	10	8	8.5
M12	XXX	XXX	1.75	110	12	9	10.2
M14	–	XXX	2	110	11	9	12
M16	XXX	XXX	2	110	12	9	14
M20	XXX	XXX	2.5	140	16	12	17.5

M | 60° | DIN 13 | ISO 2 6H | 40° | h9 | ≤3×D

Blind hole machine tap

13 4670 – **With extra long shank.**
All sizes: Shank to DIN 376 (= shank Ø relieved).
13 4670–5955 – **Form C** (2–3 turns lead chamfer).
13 5850 Size M2,3 – With the old DIN profile.
13 5955 – For particularly high hardness and toughness expectations.
13 6050 – **Form E** (1.5–2 turns lead chamfer).

Advantage:
13 4670 – Designed **for tapping threads where access is difficult.**

13 5850

HSS E | DIN 371 | DIN 376 | C 3
≤ M10 | ≥ M12

13 5855

HSS E | DIN 371 | DIN 376 | C 3
≤ M10 | ≥ M12

13 5955

HSS E | DIN 371 | DIN 376 | C 3
≤ M10 | ≥ M12

13 6050

HSS E | DIN 371 | DIN 376 | E 1½
≤ M10 | ≥ M12

13 4670

HSS E-PM | Standard | C 3

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	CuZn	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	N						
13 4670		15		**18**	**18**	**18**	9							**8**			16	●	●	○			
13 5850/6050		13		**15**	**15**	**15**	6							**6**			13	●	●	○			
13 5855		11		12	**8**	**7**	4							**4**			12	●	●				
13 5955		14		14	**10**	**9**	**5**							**5**			14	●	●	●			

M	1H 13 5850 Garant	12H 13 5855 HOLEX	12H 13 5955 HOLEX	1H 13 6050 Garant	1H 13 4670 Garant								
	Machine taps												
	HSS-E Form C	HSS-E Form C	HSS-E Form C	HSS-E Form E	extra long HSS-E-PM form C		L_{tot}						
							13 5850 13 5855 13 5955 13 6050	13 4670	13 5850 13 5855 13 5955 13 6050	13 4670	13 5850 13 5855 13 5955 13 6050	13 4670	
	vaporised	vaporised	TiCN	vaporised	vaporised	mm	mm	mm	mm	mm	mm	mm	mm
M2	XXX	–	–	–	–	0.4	45	–	2.8	–	2.1	–	1.6
M2,3	XXX	–	–	–	–	0.4	45	–	2.8	–	2.1	–	1.9
M2,5	XXX	–	–	–	–	0.45	50	–	2.8	–	2.1	–	2.05
M3	XXX	XXX	XXX	XXX	–	0.5	56	–	3.5	–	2.7	–	2.5
M3,5	XXX	–	–	–	–	0.6	56	–	4	–	3	–	2.9
M4	XXX	XXX	XXX	XXX	XXX	0.7	63	112	4.5	2.8	3.4	2.1	3.3
M5	XXX	XXX	XXX	XXX	XXX	0.8	70	125	6	3.5	4.9	2.7	4.2
M6	XXX	XXX	XXX	XXX	XXX	1	80	125	6	4.5	4.9	3.4	5
M8	XXX	XXX	XXX	XXX	XXX	1.25	90	140	8	6	6.2	4.9	6.8
M10	XXX	XXX	XXX	XXX	XXX	1.5	100	160	10	7	8	5.5	8.5
M12	XXX	XXX	XXX	XXX	XXX	1.75	110	180	9	9	7	7	10.2
M14	XXX	XXX	–	–	–	2	110	–	11	–	9	–	12
M16	XXX	XXX	–	XXX	XXX	2	110	220	12	12	9	9	14
M18	XXX	–	–	–	–	2.5	125	–	14	–	11	–	15.5
M20	XXX	XXX	–	XXX	XXX	2.5	140	280	16	16	12	12	17.5
M22	XXX	–	–	–	–	2.5	140	–	18	–	14.5	–	19.5
M24	XXX	XXX	–	–	–	3	160	–	18	–	14.5	–	21
M27	XXX	–	–	–	–	3	160	–	20	–	16	–	24
M30	XXX	–	–	–	–	3.5	180	–	22	–	18	–	26.5
M36	XXX	–	–	–	–	4	200	–	28	–	22	–	32

M | 60° | HSS E-PM | DIN 13 | 40° | h9 | ≤2.5×D

GARANT Master Tap blind hole machine taps

Universal taps, designed for use in a wide spectrum of materials with high process reliability.

- HSS-E-PM tool material for a high degree of wear resistance.
- Reduced coefficient of friction due to the new high-performance coating.
- Special geometry for optimum swarf evacuation.

13 4680 – With extra long shank.

13 4680 Size M3–M10 – **Shank to DIN 371.**

13 4680 Size M12–M20 – **Shank to DIN 376.**

13 5965 – **With internal coolant feed.**

13 6152 – **Form E** (1.5-2 turns lead chamfer)

13 6158 – **Tolerance class: ISO 3X/6GX**
For components which are galvanised or shrink slightly when hardened.

Advantage:

13 4680 – Designed **for tapping threads where access is difficult.**

13 5960

DIN 371 | DIN 376 | ISO 1X 4HX | ISO 2X 6HX | C

≤ M10 | ≥ M12 | M1,4 | ≥ M1.6

13 5965

DIN 371 | DIN 376 | ISO 2X 6HX | C

≤ M10 | ≥ M12

13 6152

DIN 371 | DIN 376 | ISO 2X 6HX | E

≤ M10 | ≥ M12

13 6158

DIN 371 | DIN 376 | ISO 3X 6GX | C

≤ M10 | ≥ M12

13 4680

Standard | ISO 2X 6HX | C

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	GG(G)	CuZn	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	K	N						
13 4680–13 5965/ 6158	30	35	20	30	30	25	12	8						10	8	20	20	●	●	●			
13 6152	22	25	15	22	22	18	8	6						7	6	15	15	●	●	●			

M	13 5960	13 5965	13 6152	13 6158	13 4680							
	GARANT Master Tap machine tap											
	HSS-E-PM Form C 6HX	HSS-E-PM IC / Form C 6HX	HSS-E-PM Form E 6HX	HSS-E-PM Form C 6GX	HSS-E-PM extra long form C 6HX		L_{tot}					
	AlTiX	AlTiX	AlTiX	AlTiX	AlTiX	mm	13 5960 13 5965 13 6152 13 6158 mm	13 4680 mm	mm	mm	mm	
M1,4	XXX	–	–	–	–	0.3	40	–	2.5	2.1	1.1	
M1,6	XXX	–	–	–	–	0.35	40	–	2.5	2.1	1.25	
M1,7	XXX	–	–	–	–	0.35	40	–	2.5	2.1	1.35	
M1,8	XXX	–	–	–	–	0.35	40	–	2.5	2.1	1.45	
M2	XXX	–	XXX	XXX	–	0.4	45	–	2.8	2.1	1.6	
M2,2	XXX	–	–	–	–	0.45	45	–	2.8	2.1	1.75	
M2,3	XXX	–	–	–	–	0.4	45	–	2.8	2.1	1.9	
M2,5	XXX	–	–	–	–	0.45	50	–	2.8	2.1	2.05	
M2,6	XXX	–	–	–	–	0.45	50	–	2.8	2.1	2.15	
M3	XXX	–	XXX	XXX	XXX	0.5	56	100	3.5	2.7	2.5	
M3,5	XXX	–	–	–	–	0.6	56	–	4	3	2.9	
M4	XXX	–	XXX	XXX	XXX	0.7	63	125	4.5	3.4	3.3	
M5	XXX	–	XXX	XXX	XXX	0.8	70	160	6	4.9	4.2	
M6	XXX	XXX	XXX	XXX	XXX	1	80	160	6	4.9	5	
M8	XXX	XXX	XXX	XXX	XXX	1.25	90	180	8	6.2	6.8	
M10	XXX	XXX	XXX	XXX	XXX	1.5	100	200	10	8	8.5	
M12	XXX	XXX	XXX	XXX	XXX	1.75	110	200	9	7	10.2	
M14	XXX	XXX	XXX	XXX	XXX	2	110	200	11	9	12	
M16	XXX	XXX	XXX	XXX	XXX	2	110	200	12	9	14	
M20	XXX	XXX	XXX	XXX	XXX	2.5	140	200	16	12	17.5	
M24	XXX	XXX	XXX	XXX	–	3	160	–	18	14.5	21	

M | 60° | HSS E-PM | Standard | DIN 13 | ISO 2X 6HX | 40° | h6 DIN 1835 B | ≤3×D

Synchronised blind hole machine tap with internal coolant supply

Sturdy design with right-hand chip flutes and shank to DIN 1835-B.
Special geometry for **universal applications** on machines with **synchronised spindle drive.**
The tap is guided by the synchronised spindle on the machine.
Special **TiAlN-S coating** for optimum tool life.
For use with **emulsion** (fat content minimum 8%).

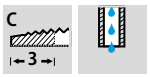
13 6173 – **Form E** (lead chamfer: 1.5 - 2 turns) for the deepest possible thread depths.
13 6176 – **Internal coolant feed** for maximum tool life.

Note: **For use on synchronised spindles,** the **GARANT** quick-change tapping chuck **No. 338100 – 338121 with minimum length adjustment (MLA)** ensures very high process reliability.
13 6171 – **Successor product to No. 136170.**

13 6171

13 6173

13 6176



Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	CuZn	Uni
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	N	
13 6171–13 6176	32	32		33	32	20	12	7						11	9		30	●

M	11H 13 6171	11H 13 6173	11H 13 6176					
	Machine tap for synchronised spindles				L_{tot}			
	HSS-E-PM Form C	HSS-E-PM Form E	HSS-E-PM IC / Form C					
	TiAlN	TiAlN	TiAlN	mm	mm	mm	mm	mm
M2,5	XXX	XXX	–	0.45	70	6	4.9	2.05
M3	XXX	XXX	–	0.5	70	6	4.9	2.5
M4	XXX	XXX	–	0.7	70	6	4.9	3.3
M5	XXX	XXX	XXX	0.8	70	6	4.9	4.2
M6	XXX	XXX	XXX	1	80	6	4.9	5
M8	XXX	XXX	XXX	1.25	90	8	6.2	6.8
M10	XXX	XXX	XXX	1.5	100	10	8	8.5
M12	XXX	XXX	XXX	1.75	110	12	9	10.2
M16	XXX	XXX	XXX	2	110	12	9	14
M20	XXX	–	–	2.5	140	16	12	17.5

M-LH | 60° | DIN 13 | C 3 | 40° | h9

Blind hole machine tap left-hand thread

13 6180 – **Left-hand cutting.** With **strong left-hand chip flutes,** for optimum swarf evacuation.
13 6190 – **Universal taps,** designed for use in a wide spectrum of materials with high process reliability.

- HSS-E-PM tool material for a high degree of wear resistance.
- Reduced coefficient of friction due to the new high-performance coating.
- Special geometry for optimum swarf evacuation.

DIN 371 ≤ M10 | DIN 376 ≥ M12

13 6180

HSS E | ISO 2 6H | ≤3×D

13 6190

HSS E-PM | ISO 2X 6HX | ≤2.5×D

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	GG(G)	CuZn	Uni
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	K	N	
13 6180		13		15	15	15	6							6			13	●
13 6190	30	35	20	30	30	25	12	8						10	8	20	20	●

M-LH	11H 13 6180	11 13 6190					
	Machine tap, left-hand thread	GARANT Master Tap machine tap left-hand thread		L_{tot}			
	HSS-E 6H	HSS-E-PM 6HX					
	vaporised	AlTiX	mm	mm	mm	mm	mm
M3	XXX	XXX	0.5	56	3.5	2.7	2.5
M4	XXX	XXX	0.7	63	4.5	3.4	3.3
M5	XXX	XXX	0.8	70	6	4.9	4.2
M6	XXX	XXX	1	80	6	4.9	5
M8	XXX	XXX	1.25	90	8	6.2	6.8
M10	XXX	XXX	1.5	100	10	8	8.5
M12	XXX	XXX	1.75	110	9	7	10.2
M14	XXX	XXX	2	110	11	9	12
M16	XXX	XXX	2	110	12	9	14
M20	XXX	XXX	2.5	140	16	12	17.5

MF | 60° | HSS E | DIN 374 | DIN 13 | ISO 2 6H | C 3 | 40° | h9 | ≤3×D

Garant

Blind hole machine tap

Surface vaporised for reduced edge build-up.

13 6210

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	CuZn	Graphite GRP CRP					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	N	N					
13 6210	13	13		15													13		●	●			

M× pitch	11H	13 6210 Machine taps vaporised	L_{tot} mm	mm	mm	mm
3×0,35		XXX	56	2.2	–	2.65
4×0,5		XXX	63	2.8	2.1	3.5
5×0,5		XXX	70	3.5	2.7	4.5
6×0,5		XXX	80	4.5	3.4	5.5
6×0,75		XXX	80	4.5	3.4	5.2
8×0,75		XXX	80	6	4.9	7.2
8×1		XXX	90	6	4.9	7
10×1		XXX	90	7	5.5	9

M× pitch	11H	13 6210 Machine taps vaporised	L_{tot} mm	mm	mm	mm
12×1		XXX	100	9	7	11
12×1,5		XXX	100	9	7	10.5
14×1,5		XXX	100	11	9	12.5
16×1,5		XXX	100	12	9	14.5
18×1,5		XXX	110	14	11	16.5
20×1,5		XXX	125	16	12	18.5
22×1,5		XXX	125	18	14.5	20.5
24×1,5		XXX	140	18	14.5	22.5

MF | 60° | HSS E | DIN 374 | DIN 13 | ISO 2 6H | C 3 | 15° | h9 | ≤2×D

Garant

Blind hole machine tap

Sturdy design, with 15° right-hand chip flutes.

13 6250

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	Graphite GRP CRP	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	N						
13 6250		13		15	15	15													●	○			

M× pitch	11H	13 6250 Machine taps	L_{tot} mm	mm	mm	mm
4×0,5		XXX	63	2.8	2.1	3.5
5×0,5		XXX	70	3.5	2.7	4.5
6×0,75		XXX	80	4.5	3.4	5.2
8×0,75		XXX	80	6	4.9	7.2
8×1		XXX	90	6	4.9	7
9×1		XXX	90	7	5.5	8
10×0,75		XXX	90	7	5.5	9.2
10×1		XXX	90	7	5.5	9
10×1,25		XXX	100	7	5.5	8.8
11×1		XXX	90	8	6.2	10
12×1		XXX	100	9	7	11
12×1,25		XXX	100	9	7	10.8
12×1,5		XXX	100	9	7	10.5
14×1		XXX	100	11	9	13
14×1,25		XXX	100	11	9	12.8
14×1,5		XXX	100	11	9	12.5
15×1		XXX	100	12	9	14
15×1,5		XXX	100	12	9	13.5
16×1		XXX	100	12	9	15
16×1,5		XXX	100	12	9	14.5
18×1		XXX	110	14	11	17
18×1,5		XXX	110	14	11	16.5

M× pitch	11H	13 6250 Machine taps	L_{tot} mm	mm	mm	mm
18×2		XXX	125	14	11	16
20×1		XXX	125	16	12	19
20×1,5		XXX	125	16	12	18.5
20×2		XXX	140	16	12	18
22×1		XXX	125	18	14.5	21
22×1,5		XXX	125	18	14.5	20.5
22×2		XXX	140	18	14.5	20
24×1		XXX	140	18	14.5	23
24×1,5		XXX	140	18	14.5	22.5
24×2		XXX	140	18	14.5	22
25×1,5		XXX	140	18	14.5	23.5
26×1,5		XXX	140	18	14.5	24.5
27×1,5		XXX	140	20	16	25.5
27×2		XXX	140	20	16	25
28×1,5		XXX	140	20	16	26.5
30×1,5		XXX	150	22	18	28.5
30×2		XXX	150	22	18	28
32×1,5		XXX	150	22	18	30.5
33×1,5		XXX	160	25	20	31.5
35×1,5		XXX	170	28	22	33.5
36×1,5		XXX	170	28	22	34.5

MF | 60° | DIN 374 | DIN 13 | ISO 2 6H | C ⟷3⟷ | 40° | h9 | ≤3×D

HSS E ≤ 24×1,5 | HSS ≥ 26×1,5

Garant Blind hole machine tap

Surface vaporised for reduced edge build-up.

13 6260

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	GG(G)	CuZn	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	K	N						
13 6260		13		15	15	15										9	13	○	●	○			

M× pitch	11H 13 6260 Machine tap vaporised	L_{tot} mm	mm	mm	mm
3×0,35	XXX	56	2.2	–	2.65
4×0,5	XXX	63	2.8	2.1	3.5
5×0,5	XXX	70	3.5	2.7	4.5
6×0,5	XXX	80	4.5	3.4	5.5
6×0,75	XXX	80	4.5	3.4	5.2
8×0,75	XXX	80	6	4.9	7.2
8×1	XXX	90	6	4.9	7
10×1	XXX	90	7	5.5	9
12×1	XXX	100	9	7	11
12×1,5	XXX	100	9	7	10.5
14×1,5	XXX	100	11	9	12.5
16×1,5	XXX	100	12	9	14.5
18×1,5	XXX	110	14	11	16.5
20×1,5	XXX	125	16	12	18.5
22×1,5	XXX	125	18	14.5	20.5
24×1,5	XXX	140	18	14.5	22.5
26×1,5	XXX	140	18	14.5	24.5
28×1,5	XXX	140	20	16	26.5
30×1,5	XXX	150	22	18	28.5

MF | 60° | DIN 374 | DIN 13 | ISO 2 6H | C ⟷3⟷ | 40° | h9

Garant Blind hole machine tap

13 6270

HSS E ≤2×D

13 6290

HSS E-PM ≤3×D

For use with **emulsion** (fat content minimum 8%).

13 6290 – **With special TiN coating** and **vaporised cutting surfaces**.
For controlled swarf evacuation and avoidance of clogging.
Especially suitable for problem materials.

Recommendation: For **TOOLOX materials we recommend deviating from the DIN data** (see table) by drilling the tapping hole ∅ **0.05** to **0.3 mm** larger.

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	TOOLOX® 33 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	Graphite GRP CRP					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	H	M	M	S	N					
13 6270				20	19	19	9							3					●	●			
13 6290				27	23	23	13	10						12			5		●	●			

M× pitch	11H 13 6270 HSS-E TiCN	11H 13 6290 HSS-E-PM TiN / vaporised	L_{tot} mm	mm	mm	mm
4×0,5	XXX	–	63	2.8	2.1	3.5
5×0,5	XXX	–	70	3.5	2.7	4.5
6×0,5	XXX	XXX	80	4.5	3.4	5.5
6×0,75	XXX	XXX	80	4.5	3.4	5.2
8×0,75	XXX	XXX	80	6	4.9	7.2
8×1	XXX	XXX	90	6	4.9	7
10×1	XXX	XXX	90	7	5.5	9
12×1	XXX	XXX	100	9	7	11
12×1,5	XXX	XXX	100	9	7	10.5
14×1,5	XXX	XXX	100	11	9	12.5
16×1,5	XXX	XXX	100	12	9	14.5
18×1,5	XXX	XXX	110	14	11	16.5
20×1,5	XXX	XXX	125	16	12	18.5
24×1,5	XXX	XXX	140	18	14.5	22.5

GARANT Master Tap INOX

Developed for very high performance in stainless steel.

Discover the outstanding characteristics of the GARANT Master Tap INOX.

- **TOP chip formation**
  due to optimised cutting edges.
- **TOP chip evacuation**
  due to the special flute geometry.
- **TOP wear resistance**
  due to high-quality HSS-E-PM tool material.
- **TOP efficiency**
  due to the special micro-geometry.
- **TOP tool life**
  due to the most modern TiAlN multilayer coating.

MF | 60° | DIN 374 | DIN 13 | C 3 | h9

Blind hole machine tap for stainless and acid-resistant steels

13 7050 – Surface vaporised for reduced edge build-up.

13 7053 – **GARANT Master Tap INOX:**
High-performance tap, specially developed for **good process reliability in stainless and acid-resistant steels** and **duplex materials.**
The 45° helix angle of the flutes facilitates chip formation especially in ductile austenitic CrNi steels.

- **HSS-E-PM tool material** for a high degree of wear resistance
- The latest generation of **TiALN multi-layer coating**
- **Parameterised flute geometry** for optimum chip formation and **torsional stiffness**

13 7050

HSS E | ISO 2 6H | 40° | ≤2×D

13 7053

HSS E-PM | ISO 2X 6HX | 45° | ≤2.5×D

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	CuZn	Graphite GRP CRP					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	N	N					
13 7050		13		15	15	15								6			13		●	○			
13 7053		28			23	23	12							11	9				●	●			

M× pitch	13 7050	13 7053	L_{tot}			
	Machine tap	GARANT Master Tap INOX machine tap				
	HSS-E vaporised	HSS-E-PM TiAlN	mm	mm	mm	mm
4×0,5	XXX	XXX	63	2.8	2.1	3.5
5×0,5	XXX	XXX	70	3.5	2.7	4.5
6×0,5	XXX	XXX	80	4.5	3.4	5.5
6×0,75	XXX	XXX	80	4.5	3.4	5.2
8×0,75	XXX	XXX	80	6	4.9	7.2
8×1	XXX	XXX	90	6	4.9	7
10×1	XXX	XXX	90	7	5.5	9
10×1,25	–	XXX	100	7	5.5	8.8
12×1	XXX	XXX	100	9	7	11
12×1,25	–	XXX	100	9	7	10.8
12×1,5	XXX	XXX	100	9	7	10.5
14×1,5	XXX	XXX	100	11	9	12.5
16×1,5	XXX	XXX	100	12	9	14.5
18×1,5	XXX	XXX	110	14	11	16.5
20×1,5	XXX	XXX	125	16	12	18.5
22×1,5	XXX	XXX	125	18	14.5	20.5
24×1,5	XXX	XXX	140	18	14.5	22.5
26×1,5	–	XXX	140	18	14.5	24.5
30×1,5	–	XXX	150	22	18	28.5

MF | 60° | HSS E-PM | DIN 374 | DIN 13 | ISO 2X 6HX | C 3 | 20° | h9 | ≤2×D

Garant Blind hole machine tap

Surface vaporised for reduced edge build-up.

13 7055

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	Graphite GRP CRP	Uni
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	N	
13 7055						18	9	3								4		

M× pitch	11H 13 7055 Machine tap HSS-E-PM vaporised	L_{tot} mm	mm	mm	mm
5×0,5	XXX	70	3.5	2.7	4.5
8×0,75	XXX	80	6	4.9	7.2
8×1	XXX	90	6	4.9	7
10×1	XXX	90	7	5.5	9
10×1,25	XXX	100	7	5.5	8.8
12×1	XXX	100	9	7	11
12×1,25	XXX	100	9	7	10.8
12×1,5	XXX	100	9	7	10.5
14×1	XXX	100	11	9	13
14×1,5	XXX	100	11	9	12.5
16×1	XXX	100	12	9	15
16×1,5	XXX	100	12	9	14.5
18×1,5	XXX	110	14	11	16.5
20×1,5	XXX	125	16	12	18.5
22×1,5	XXX	125	18	14.5	20.5
24×1,5	XXX	140	18	14.5	22.5
26×1,5	XXX	140	18	14.5	24.5
30×1,5	XXX	150	22	18	28.5

MF | 60° | HSS E-PM | DIN 374 | DIN 13 | ISO 2X 6HX | C 3 | 40° | h9 | ≤2.5×D

Garant GARANT Master Tap blind hole machine taps

Universal taps, designed for use in a wide spectrum of materials with high process reliability.

- HSS-E-PM tool material for a high degree of wear resistance.
- Reduced coefficient of friction due to the new high-performance coating.
- Special geometry for optimum swarf evacuation.

13 7160

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	GG(G)	CuZn	Uni
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	K	N	
13 7160	30	35	20	30	30	25	12	8						10	8	20	20	●

M× pitch	11l 13 7160 GARANT Master Tap machine tap HSS-E-PM AlTiX	L_{tot} mm	mm	mm	mm
3×0,35	XXX	56	2.2	–	2.65
4×0,5	XXX	63	2.8	2.1	3.5
5×0,5	XXX	70	3.5	2.7	4.5
6×0,5	XXX	80	4.5	3.4	5.5
6×0,75	XXX	80	4.5	3.4	5.2
6,5×0,75	XXX	80	5.5	4.3	5.8
8×0,75	XXX	80	6	4.9	7.2
8×1	XXX	90	6	4.9	7
10×1	XXX	90	7	5.5	9
10×1,25	XXX	100	7	5.5	8.8
12×1	XXX	100	9	7	11
12×1,25	XXX	100	9	7	10.8
12×1,5	XXX	100	9	7	10.5
14×1,5	XXX	100	11	9	12.5
16×1,5	XXX	100	12	9	14.5
18×1,5	XXX	110	14	11	16.5
20×1,5	XXX	125	16	12	18.5
22×1,5	XXX	125	18	14.5	20.5
24×1,5	XXX	140	18	14.5	22.5
26×1,5	XXX	140	18	14.5	24.5
30×1,5	XXX	150	22	18	28.5

MF | 60° | HSS E-PM | Standard | DIN 13 | ISO 2X 6HX | 40° | h6 DIN 1835 B | ≤3×D

Synchronised blind hole machine tap with internal coolant supply

Sturdy version with right-hand helix and shank to DIN 1835-B. Special geometry for **general-purpose use** on machines with **synchronised spindle drive.** The tap is controlled by the synchronising spindle of the machine. Special **TiAlN-S coating** for optimum tool life. For use with **emulsion** (fat content minimum 8%).

13 7183 – **Form E** (lead chamfer: 1.5 - 2 turns) for the deepest possible thread depths.

13 7186 – With **internal coolant supply** for maximum tool life.

Note:	**For use on synchronised spindles,** the **GARANT** quick-change tapping chuck **No. 338100 – 338121 with minimum length adjustment (MLA)** ensures very high process reliability.

13 7180

13 7183

13 7186

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	CuZn	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	N						
13 7180–13 7186	32	**32**		**33**	**32**	**20**	**12**	**7**						**11**	**9**		30	●	●	●	●		

M× pitch	1H 13 7180	1H 13 7183	1H 13 7186	L_{tot}			
	Machine tap for synchronised spindles						
	HSS-E-PM Form C	**HSS-E-PM Form E**	**HSS-E-PM IC / Form C**				
	TiAlN	**TiAlN**	**TiAlN**	mm	mm	mm	mm
8×1	XXX	XXX	XXX	90	8	6.2	7
10×1	XXX	XXX	XXX	90	10	8	9
10×1,25	XXX	XXX	XXX	100	10	8	8.8
12×1	XXX	XXX	XXX	100	12	9	11
12×1,25	XXX	XXX	XXX	100	12	9	10.8
12×1,5	XXX	XXX	XXX	100	12	9	10.5
14×1,5	XXX	XXX	XXX	100	12	9	12.5
16×1,5	XXX	XXX	XXX	100	12	9	14.5
20×1,5	XXX	XXX	XXX	125	16	12	18.5

MF-LH | 60° | HSS E-PM | DIN 374 | DIN 13 | ISO 2X 6HX | C 3 | 40° | h9 | ≤2.5×D

GARANT Master Tap blind hole machine tap set, left-hand thread

Universal taps, designed for use in a wide spectrum of materials with high process reliability.

- HSS-E-PM tool material for a high degree of wear resistance.
- Reduced coefficient of friction due to the new high-performance coating.
- Special geometry for optimum swarf evacuation.

13 7190

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	GG(G)	CuZn	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	K	N						
13 7190	**30**	**35**	**20**	**30**	**30**	**25**	**12**	**8**						**10**	**8**	**20**	**20**	●	●	●			

M× pitch	1H 13 7190	L_{tot}			
	GARANT Master Tap machine tap				
	Left-hand thread				
	AlTiX	mm	mm	mm	mm
8×1	XXX	90	6	4.9	7
10×1	XXX	90	7	5.5	9
10×1,25	XXX	100	7	5.5	8.8
12×1,25	XXX	100	9	7	10.8
12×1,5	XXX	100	9	7	10.5
16×1,5	XXX	100	12	9	14.5
20×1,5	XXX	125	16	12	18.5

G | 55° | HSS E-PM | DIN 5156 | C ⟷3⟷ | 40° | h9 | ≤2×D

Blind hole machine tap

Hard chrome-plated surface for reduced edge build-up and increased tool life.

Application: **For Whitworth parallel pipe threads** DIN-ISO 228/1 (threads that do not form a seal within the connection).

13 7340

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	CuZn	Graphite GRP CRP
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	N	N
13 7340	28	28	23	27													28	

inch	11H 13 7340 Machine tap HSS-E-PM Hard chrome	Threads per inch	Thread ∅	L_{tot}			
			mm	mm	mm	mm	mm
G1/8	XXX	28	9.73	90	7	5.5	8.8
G1/4	XXX	19	13.16	100	11	9	11.8
G3/8	XXX	19	16.66	100	12	9	15.25
G1/2	XXX	14	20.96	125	16	12	19
G3/4	XXX	14	26.44	140	20	16	24.5
G1	XXX	11	33.25	160	25	20	30.75

G | 55° | HSS E-PM | Standard | 40° | h6 DIN 1835 B | ≤2.5×D

Synchronised blind hole machine tap with internal coolant supply

Sturdy version with right-hand helix and shank to DIN 1835-B. Special geometry for use on machines with **synchronised spindle drives.** The tap is controlled by the synchronising spindle of the machine. With the latest generation of special **DLC coating sp²**. For use with **emulsion** (fat content minimum 8%).

13 7345 – **Form E** (lead chamfer: 1.5 - 2 turns) for the deepest possible thread depths.

13 7346 – With **internal coolant supply** for maximum tool life.

Application: **For Whitworth parallel pipe threads** DIN-ISO 228/1 (threads that do not form a seal within the connection).

Note: **For use on synchronised spindles,** the **GARANT** quick-change tapping chuck **No. 338100 – 338121 with minimum length adjustment (MLA)** ensures very high process reliability.

C ⟷3⟷

13 7344

E ⟷1½

13 7345

C ⟷3⟷

13 7346

Suitable for/ v_c [m/min]	Alu	Alu	Alu cast > 10 % Si	PMMA acrylic	PE-HD	PA 66	PEEK	PF 31	AFRP aramid	PVDF GF20	POM GF25	PA 66 GF30	PEEK GF30	PTFE CF25	PEEK CF30	Hybrid	Cu	CuZn
ISO code	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
13 7344–13 7346	30	35	20	25								20		25			55	35

inch	11H 13 7344	11H 13 7345	11H 13 7346	Threads per inch	Thread ∅	L_{tot}			
	Machine tap for synchronised spindles								
	HSS-E-PM Form C	HSS-E-PM Form E	HSS-E-PM IC / Form C						
	DLC	DLC	DLC		mm	mm	mm	mm	mm
G1/8	XXX	XXX	XXX	28	9.73	90	8	6.2	8.8
G1/4	XXX	XXX	XXX	19	13.16	100	12	9	11.8
G3/8	XXX	XXX	XXX	19	16.66	100	12	9	15.25
G1/2	XXX	XXX	XXX	14	20.96	125	16	12	19

G | 55° | DIN 5156 | C | 40° | h9 | ≤3×D

HSS E ≤ 5/8″ | HSS ≥ 3/4″

Garant

Blind hole machine tap

Surface vaporised for reduced edge build-up.

13 7360 – **Tolerance class ISO 228 + 0.05 mm.**

Application: **For Whitworth parallel pipe threads** DIN-ISO 228/1 (threads that do not form a seal within the connection).

13 7360 – For components which are **galvanised** after threading or shrink slightly when hardened.

Recommendation:

13 7360 – We recommend **deviating from the DIN data** (see table) by drilling the tapping hole ∅ **0.05 mm larger.**

13 7350

13 7360

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	CuZn	Graphite GRP CRP
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	N	N
13 7350/7360		13		15	15	15											13	

inch	11H 13 7350 Machine tap vaporised	11H 13 7360 Machine tap ISO 228 +0.05 mm vaporised	Threads per inch	Thread ∅	L_{tot}			
				mm	mm	mm	mm	mm
G1/8	XXX	XXX	28	9.73	90	7	5.5	8.8
G1/4	XXX	XXX	19	13.16	100	11	9	11.8
G3/8	XXX	XXX	19	16.66	100	12	9	15.25
G1/2	XXX	XXX	14	20.96	125	16	12	19
G5/8	XXX	–	14	22.91	125	18	14.5	21
G3/4	XXX	XXX	14	26.44	140	20	16	24.5
G1	XXX	XXX	11	33.25	160	25	20	30.75
G1.1/4	XXX	–	11	41.91	170	32	24	39.5
G1.1/2	XXX	–	11	47.8	190	36	29	45.25
G2	XXX	–	11	59.61	220	45	32.5	57

G | 55° | HSS E-PM | DIN 5156 | C | 40° | h9 | ≤2×D

Garant

Blind hole machine tap

For use with **emulsion** (fat content minimum 8%).

Application: **For Whitworth parallel pipe threads** DIN-ISO 228/1 (threads that do not form a seal within the connection).

Recommendation: For **TOOLOX materials** we recommend **deviating from the DIN data** (see table) by drilling the tapping hole ∅ **0.05** to **0.3 mm** larger.

13 7410

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	TOOLOX® 33 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	Graphite GRP CRP
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	H	M	M	S	N
13 7410					23	23	13	7						7				

inch	11H 13 7410 Machine tap HSS-E-PM TiCN	Threads per inch	Thread ∅	L_{tot}			
			mm	mm	mm	mm	mm
G1/8	XXX	28	9.73	90	7	5.5	8.8
G1/4	XXX	19	13.16	100	11	9	11.8
G3/8	XXX	19	16.66	100	12	9	15.25
G1/2	XXX	14	20.96	125	16	12	19
G3/4	XXX	14	26.44	140	20	16	24.5
G1	XXX	11	33.25	160	25	20	30.75

G | 55° | DIN 5156 | h9

Blind hole machine tap for stainless and acid-resistant steels

13 7450

HSS E ≤ G1/2 inch | HSS ≤ G3/4 inch | C 3 | 40° | ≤2×D

13 7450 – Surface vaporised for reduced edge build-up.

13 7752 – **Form E** (1.5-2 turns lead chamfer).

13 7750/7752 – **GARANT Master Tap INOX:**
High-performance tap, specially developed for **good process reliability in stainless and acid-resistant steels** and **duplex materials.**
The 45° helix angle of the chip flutes facilitates chip formation especially in ductile austenitic CrNi steels.

- **HSS-E-PM tool material** for maximum wear resistance
- The latest generation of **TiALN multi-layer coating**
- **Parameterised flute geometry** for optimum chip formation and **rigidity**

Application: **For Whitworth parallel pipe threads** DIN-ISO 228/1
(threads that do not form a seal within the connection).

13 7750

HSS E-PM | C 3 | 45° | ≤2.5×D

13 7752

HSS E-PM | E 1½ | 45° | ≤2.5×D

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	CuZn	Graphite GRP CRP					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	N	N					
13 7450		13		15	15	15								6			13		●	○			
13 7750/7752		28			23	23	12							11	9				●	●			

inch	13 7450	13 7750	13 7752	Threads per inch	Thread ∅	L_{tot}			
	Machine tap	GARANT Master Tap INOX machine tap							
	HSS-E Form C	HSS-E-PM Form C	HSS-E-PM Form E						
	vaporised	TiAlN	TiAlN						
					mm	mm	mm	mm	mm
G1/8	XXX	XXX	XXX	28	9.73	90	7	5.5	8.8
G1/4	XXX	XXX	XXX	19	13.16	100	11	9	11.8
G3/8	XXX	XXX	XXX	19	16.66	100	12	9	15.25
G1/2	XXX	XXX	XXX	14	20.96	125	16	12	19
G5/8	–	XXX	XXX	14	22.91	125	18	14.5	21
G3/4	XXX	XXX	XXX	14	26.44	140	20	16	24.5
G1	XXX	XXX	XXX	11	33.25	160	25	20	30.75

G | 55° | HSS E-PM | DIN 5156 | C 3 | 40° | h9 | ≤2.5×D

GARANT Master Tap blind hole machine taps

Universal taps, designed for use in a wide spectrum of materials with high process reliability.

- HSS-E-PM tool material for a high degree of wear resistance.
- Reduced coefficient of friction due to the new high-performance coating.
- Special geometry for optimum swarf evacuation.

Application: **For Whitworth parallel pipe threads** DIN-ISO 228/1
(threads that do not form a seal within the connection).

13 7805

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	GG(G)	CuZn	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	K	N						
13 7805	30	35	20	30	30	25	12	8						10	8	20	20	●	●	●			

inches	13 7805	Threads per inch	Thread ∅	L_{tot}			
	GARANT Master Tap machine tap						
	HSS-E-PM Form C						
	AlTiX						
			mm	mm	mm	mm	mm
G1/16	XXX	28	7.72	90	6	4.9	7.7
G1/8	XXX	28	9.73	90	7	5.5	8.8
G1/4	XXX	19	13.16	100	11	9	11.8
G3/8	XXX	19	16.66	100	12	9	15.25
G1/2	XXX	14	20.96	125	16	12	19
G5/8	XXX	14	22.91	125	18	14.5	21
G3/4	XXX	14	26.44	140	20	16	24.5
G1	XXX	11	33.25	160	25	20	30.75

G | 55° | HSS E-PM | Standard | 40° | h6 DIN 1835 B | ≤3×D

Synchronised blind hole machine tap with internal coolant supply

Sturdy version with right-hand helix and shank to DIN 1835-B.
Special geometry for **general-purpose use** on machines with **synchronised spindle drive.**
The tap is controlled by the synchronising spindle of the machine.
Special **TiAlN-S coating** for optimum tool life.
For use with **emulsion** (fat content minimum 8%).

13 7813 – **Form E** (lead chamfer: 1.5 - 2 turns) for the deepest possible thread depths.
13 7816 – With **internal coolant supply** for maximum tool life.

Application: **For Whitworth parallel pipe threads** DIN-ISO 228/1 (threads that do not form a seal within the connection).

Note: **For use on synchronised spindles,** the **GARANT** quick-change tapping chuck **No. 338100 – 338121 with minimum length adjustment (MLA)** ensures very high process reliability.

13 7810
C ⊢3⊣

13 7813
E ⊢1½⊣

13 7816
C ⊢3⊣

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	CuZn	Uni
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	N	
13 7810–13 7816	32	32		33	32	20	12	7						11	9		30	●

inch	11H 13 7810	11H 13 7813	11H 13 7816	Threads per inch	Thread ∅	L_{tot}			
	Machine tap for synchronised spindles								
	HSS-E-PM Form C TiAlN	HSS-E-PM Form E TiAlN	HSS-E-PM IC / Form C TiAlN		mm	mm	mm	mm	mm
G1/8	XXX	XXX	XXX	28	9.73	90	8	6.2	8.8
G1/4	XXX	XXX	XXX	19	13.16	100	12	9	11.8
G3/8	XXX	XXX	XXX	19	16.66	100	12	9	15.25
G1/2	XXX	XXX	XXX	14	20.96	125	16	12	19

UNC | 60° | 2B | C ⊢3⊣ | h9 | ≤2×D

Blind hole machine tap

Sturdy design, with right-hand chip flutes.
Application: **For UNC uniform coarse threads** ASME – B1.1.

DIN 371 (≤ 3/8″) | DIN 376 (≥ 7/16″)

13 7860

HSS E (≤ 7/8″) | HSS (1″) | 20°

13 7862

HSS E | 15°

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	Graphite GRP CRP	Uni
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	N	
13 7860/7862		13		15	15													● ○

UNC	11H 13 7860	12H 13 7862	Threads per inch	Thread ∅	L_{tot}					
	Machine tap					13 7860	13 7862	13 7860	13 7862	
				mm	mm	mm	mm	mm	mm	mm
4-40	XXX	XXX	40	2.85	56	3.5	3.5	2.7	2.7	2.35
5-40	XXX	XXX	40	3.18	56	3.5	3.5	2.7	2.7	2.65
6-32	XXX	XXX	32	3.51	56	4	4	3	3	2.85
8-32	XXX	XXX	32	4.17	63	4.5	4.5	3.4	3.4	3.5
10-24	XXX	XXX	24	4.83	70	6	6	4.9	4.9	3.9
12-24	XXX	XXX	24	5.49	80	6	6	4.9	4.9	4.5
1/4-20	XXX	XXX	20	6.35	80	7	7	5.5	5.5	5.1
5/16-18	XXX	XXX	18	7.94	90	8	8	6.2	6.2	6.6
3/8-16	XXX	XXX	16	9.53	100	9	10	7	8	8
7/16-14	XXX	XXX	14	11.11	100	8	8	6.2	6.2	9.4
1/2-13	XXX	XXX	13	12.7	110	9	9	7	7	10.8
9/16-12	XXX	XXX	12	14.29	110	11	11	9	9	12.2
5/8-11	XXX	XXX	11	15.88	110	12	12	9	9	13.5
3/4-10	XXX	XXX	10	19.05	125	14	14	11	11	16.5
7/8-9	XXX	XXX	9	22.23	140	18	18	14.5	14.5	19.5
1-8	XXX	XXX	8	25.4	160	20	18	16	14.5	22.25

UNC | 60° | HSS E-PM | 2BX | C 3 | 45° | h9 | ≤2.5×D

DIN 371 ≤ 3/8″ | DIN 376 ≥ 7/16″

GARANT Master Tap INOX blind hole machine tap for stainless and acid-resistant steels

High-performance tap, specially developed for **good process reliability in stainless and acid-resistant steels** and **duplex materials.**

- **HSS-E-PM tool material** for maximum wear resistance.
- The latest generation of **TiAlN multi-layer** coating.
- **Parameterised flute geometry** for optimum chip formation and **rigidity.**

Application: **For UNC uniform coarse threads** ASME – B1.1.

13 7857

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	Graphite GRP CRP	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	N						
13 7857		28			23	23	12							11	9				●	●			

UNC	13 7857 GARANT Master Tap INOX machine tap HSS-E-PM TiAlN	Threads per inch	Thread ∅	L_{tot}			
			mm	mm	mm	mm	mm
2-56	XXX	56	2.18	45	2.8	2.1	1.85
4-40	XXX	40	2.85	56	3.5	2.7	2.35
5-40	XXX	40	3.18	56	3.5	2.7	2.65
6-32	XXX	32	3.51	56	4	3	2.85
8-32	XXX	32	4.17	63	4.5	3.4	3.5
10-24	XXX	24	4.83	70	6	4.9	3.9
12-24	XXX	24	5.49	80	6	4.9	4.5
1/4-20	XXX	20	6.35	80	7	5.5	5.1

UNC	13 7857 GARANT Master Tap INOX machine tap HSS-E-PM TiAlN	Threads per inch	Thread ∅	L_{tot}			
			mm	mm	mm	mm	mm
5/16-18	XXX	18	7.94	90	8	6.2	6.6
3/8-16	XXX	16	9.53	100	9	7	8
7/16-14	XXX	14	11.11	100	8	6.2	9.4
1/2-13	XXX	13	12.7	110	9	7	10.8
5/8-11	XXX	11	15.88	110	12	9	13.5
3/4-10	XXX	10	19.05	125	14	11	16.5
7/8-9	XXX	9	22.23	140	18	14.5	19.5
1-8	XXX	8	25.4	160	18	14.5	22.25

UNC | 60° | HSS E-PM | 2BX | C 3 | 40° | h9 | ≤2.5×D

DIN 371 ≤ 3/8″ | DIN 376 ≥ 1/2″

GARANT Master Tap blind hole machine taps

Universal taps, designed for use in a wide spectrum of materials with high process reliability.

- **HSS-E-PM tool material** for maximum wear resistance.
- **Reduced coefficient of friction** due to the new high-performance coating.
- **Special geometry** for optimum swarf evacuation.

Application: **For UNC uniform coarse threads** ASME – B1.1.

13 7870

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	GG(G)	CuZn	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	K	N						
13 7870	30	35	20	30	30	25	12	8						10	8	20	20	●	●	●			

UNC	13 7870 GARANT Master Tap machine tap HSS-E-PM AlTiX	Threads per inch	Thread ∅	L_{tot}			
			mm	mm	mm	mm	mm
2-56	XXX	56	2.18	46	2.8	2.1	1.85
4-40	XXX	40	2.85	56	3.5	2.7	2.35
6-32	XXX	32	3.51	56	4	3	2.85
8-32	XXX	32	4.17	63	4.5	3.4	3.5
10-24	XXX	24	4.83	70	6	4.9	3.9
12-24	XXX	24	5.49	80	6	4.9	4.5
1/4-20	XXX	20	6.35	80	7	5.5	5.1

UNC	13 7870 GARANT Master Tap machine tap HSS-E-PM AlTiX	Threads per inch	Thread ∅	L_{tot}			
			mm	mm	mm	mm	mm
5/16-18	XXX	18	7.94	90	8	6.2	6.6
3/8-16	XXX	16	9.53	100	10	8	8
1/2-13	XXX	13	12.7	110	9	7	10.8
5/8-11	XXX	11	15.88	110	12	9	13.5
3/4-10	XXX	10	19.05	125	14	11	16.5
7/8-9	XXX	9	22.23	140	18	14.5	19.5

UNF | 60° | 2B | C, 3 | h9 | ≤2×D

Blind hole machine tap

Sturdy design, with right-hand chip flutes.
Application: **For UNF uniform fine threads** ASME – B1.1.

13 8000

HSS E | HSS | DIN 371 | DIN 374 | 20°

≤ 7/8″ | 1″ | ≤ 1/4″ | ≤ 5/16″

13 8002

HSS E | DIN 374 | 15°

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	Graphite GRP CRP	Uni
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	N	
13 8000/8002		13		15	15													

UNF	11H 13 8000 Garant	12H 13 8002 HOLEX	Threads per inch	Thread ∅	L_{tot}						
	Machine tap										
	DIN 371 / 374	DIN 374			13 8000	13 8002	13 8000	13 8002	13 8000	13 8002	
				mm	mm	mm	mm	mm	mm	mm	mm
10-32	XXX	XXX	32	4.83	70	70	6	3.5	4.9	2.7	4.1
12-28	XXX	XXX	28	5.49	80	80	6	4	4.9	3	4.7
1/4-28	XXX	XXX	28	6.35	80	80	7	4.5	5.5	3.4	5.5
5/16-24	XXX	XXX	24	7.94	90	90	6	6	4.9	4.9	6.9
3/8-24	XXX	XXX	24	9.53	100	90	7	7	5.5	5.5	8.5
7/16-20	XXX	XXX	20	11.11	100	100	8	8	6.2	6.2	9.9
1/2-20	XXX	XXX	20	12.7	100	100	9	9	7	7	11.5
9/16-18	XXX	XXX	18	14.29	100	100	11	11	9	9	12.9
5/8-18	XXX	XXX	18	15.88	100	100	12	12	9	9	14.5
3/4-16	XXX	XXX	16	19.05	110	110	14	14	11	11	17.5
7/8-14	XXX	XXX	14	22.23	125	125	18	18	14.5	14.5	20.4
1-12	XXX	XXX	12	25.4	140	140	20	18	16	14.5	23.25

UNF | 60° | HSS E-PM | 2BX | C, 3 | 45° | h9 | ≤2.5×D

DIN 371 | DIN 374

≤ 3/8″ | ≥ 7/16″

GARANT Master Tap INOX blind hole machine tap for stainless and acid-resistant steels

GARANT Master Tap INOX:
High-performance tap, specially developed for **good process reliability in stainless and acid-resistant steels** and **duplex materials.**
The 45° helix angle of the chip flutes facilitates chip formation especially in ductile austenitic CrNi steels.

- **HSS-E-PM tool material** for maximum wear resistance
- The latest generation of **TiALN multi-layer coating**
- **Parameterised flute geometry** for optimum chip formation and **rigidity**

Application: **For UNF uniform fine threads** ASME – B1.1.

13 8007

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	Graphite GRP CRP	Uni
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	N	
13 8007		28			23	23	12							11	9			

UNF	11I 13 8007 GARANT Master Tap INOX machine tap HSS-E-PM TiAlN	Threads per inch	Thread ∅	L_{tot}			
			mm	mm	mm	mm	mm
2-64	XXX	64	2.18	45	2.8	2.1	1.85
4-48	XXX	48	2.85	56	3.5	2.7	2.4
5-44	XXX	44	3.18	56	3.5	2.7	2.7
6-40	XXX	40	3.51	56	4	3	2.95
8-36	XXX	36	4.17	63	4.5	3.4	3.5
10-32	XXX	32	4.83	70	6	4.9	4.1
12-28	XXX	28	5.49	80	6	4.9	4.7
1/4-28	XXX	28	6.35	80	7	5.5	5.5

UNF	11I 13 8007 GARANT Master Tap INOX machine tap HSS-E-PM TiAlN	Threads per inch	Thread ∅	L_{tot}			
			mm	mm	mm	mm	mm
5/16-24	XXX	24	7.94	90	8	6.2	6.9
3/8-24	XXX	24	9.53	100	9	7	8.5
7/16-20	XXX	20	11.11	100	8	6.2	9.9
1/2-20	XXX	20	12.7	100	9	7	11.5
5/8-18	XXX	18	15.88	100	12	9	14.5
3/4-16	XXX	16	19.05	110	14	11	17.5
7/8-14	XXX	14	22.23	125	18	14.5	20.4
1-12	XXX	12	25.4	140	18	14.5	23.25

UNF | 60° | HSS E-PM | 2BX | C 3 | 40° | h9 | ≤2.5×D

DIN 371 | DIN 374

≤ 3/8-24 ≥ 7/16-20

GARANT Master Tap blind hole machine taps

Universal taps, designed for use in a wide spectrum of materials with high process reliability.

- HSS-E-PM tool material for maximum wear resistance.
- Reduced coefficient of friction due to the new high-performance coating.
- Special geometry for optimum swarf evacuation.

Application: **For UNF uniform fine threads** ASME – B1.1.

13 8010

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	GG(G)	CuZn	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	K	N						
13 8010	30	35	20	30	30	25	12	8						10	8	20	20	●	●	●			

UNF	13 8010 GARANT Master Tap Machine tap HSS-E-PM AlTiX	Threads per inch	Thread Ø	L_{tot}			
			mm	mm	mm	mm	mm
10-32	XXX	32	4.83	70	6	4.9	4.1
1/4-28	XXX	28	6.35	80	7	5.5	5.5
5/16-24	XXX	24	7.94	90	8	6.2	6.9
3/8-24	XXX	24	9.53	90	10	8	8.5
7/16-20	XXX	20	11.11	100	8	6.2	9.9

UNF	13 8010 GARANT Master Tap Machine tap HSS-E-PM AlTiX	Threads per inch	Thread Ø	L_{tot}			
			mm	mm	mm	mm	mm
1/2-20	XXX	20	12.7	100	9	7	11.5
9/16-18	XXX	18	14.29	100	11	9	12.9
5/8-18	XXX	18	15.88	100	12	9	14.5
3/4-16	XXX	16	19.05	110	14	11	17.5
7/8-14	XXX	14	22.23	125	18	14.5	20.4

NPT | 60° | ANSI B1.20.1 | C 3 | 1:16 | h9

Through and blind hole machine taps

13 8090 – **Sturdy version,** with straight flutes.

13 8100 – **For the highest performance demands.**
For use with **emulsion** (fat content minimum 8%).

13 8110 – A **special TiAlN coating** for long tool life. Due to **interrupted** guide thread: **reduced tapping torque** and **improved distribution of lubricant.**
For use with **emulsion** (fat content minimum 8%).

Application: **Tapered** pipe threads **(NPT)** to **ANSI B1.20.1,** for threads with sealants.
See the table for the specified minimum size of the tapping hole.

Recommendation: **Tapping hole Ø A:**
Pre-drill a plain hole **without using a reamer.**
Tapping hole Ø B:
Pre-drill a plain hole and then **ream it using a 1:16 taper reamer (see No. 162650).**
The taper bore Ø can then be checked laterally by reference to the D_{max} check dimension (see table).
Variant B for drilling the tapping hole offers the best process reliability for the tapping operation.

13 8090

HSS E | Standard

13 8100

HSS E-PM | Standard | 15°

13 8110

HSS E | DIN 374

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	TOOLOX® 33 HRC	TOOLOX® 44 HRC	HARDOX® 500 < 1600 N	INOX < 900 N	GG(G)	CuZn	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	H	M	K	N						
13 8090		13		13	10											9	13		●	○			
13 8100						23	13	7				4	3	2					●	●			
13 8110	13	18		17	15	12									5	14	16	○	●	●			

NPT	12H 13 8090 HOLEX	11H 13 8100 Garant	11H 13 8110 Machine tap HSS-E-PM TiAlN	TiAlN	Threads per inch	L_{tot} 13 8090 13 8100	L_{tot} 13 8110			Tapping hole Ø A		Tapping hole Ø B	Thread gauge Ø D_{max} + 0.05	Tapping hole minimum depth
						mm	mm	mm	mm	mm	inch	mm	mm	mm
1/16-27	–	–	–	XXX	27	–	90	6	4.9	6.15	–	5.95	6.39	12
1/8-27	XXX	XXX	XXX	XXX	27	90	100	7	5.5	8.5	–	8.25	8.74	12
1/4-18	XXX	XXX	XXX	XXX	18	100	100	11	9	11.1	–	10.75	11.36	17.5
3/8-18	XXX	XXX	XXX	XXX	18	100	110	12	9	–	9/16	14.1	14.8	17.6
1/2-14	XXX	XXX	XXX	XXX	14	125	140	16	12	17.85	–	17.5	18.32	22.9
3/4-14	XXX	XXX	XXX	XXX	14	140	150	20	16	23.3	–	22.7	23.67	23
1-11,5	XXX	XXX	XXX	XXX	11.5	160	170	25	20	29	–	28.6	29.69	27.4

NPT | 60° | HSS E-PM | Standard | ANSI B1.20.1 | C 3 | 1:16 | h9

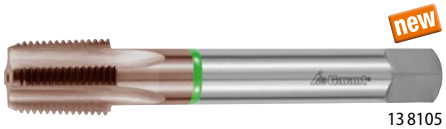
GARANT Master Tap through and blind hole machine taps

Universal taps, designed for use in a wide spectrum of materials with high process reliability.

- HSS-E-PM tool material for maximum wear resistance.
- Reduced coefficient of friction due to the new high-performance coating.
- Special geometry for optimum chip evacuation.

Application: **Tapered** pipe threads **(NPT)** to **ANSI B1.20.1**, for threads with sealants.
See the table for the specified minimum size of the tapping hole.

Recommendation: **Tapping hole Ø A:**
Pre-drill a plain hole **without using a reamer.**
Tapping hole Ø B:
Pre-drill a plain hole and then **ream it using a 1:16 taper reamer (see No. 162650).**
The taper bore Ø can then be checked laterally by reference to the D_{max} check dimension (see table).
Variant B for drilling the tapping hole offers the best process reliability for the tapping operation.



13 8105

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	GG(G)	CuZn	Uni
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	K	N	
13 8105	30	35	20	30	30	25	12	8						10	8	20	20	●

NPT	13 8105	Threads per inch	L_{tot}			Tapping hole Ø A		Tapping hole Ø B	Thread gauge Ø D_{max} + 0.05	Tapping hole minimum depth
	GARANT Master Tap machine tap HSS-E-PM AlTiX		mm	mm	mm	mm	inch	mm	mm	mm
1/16-27	XXX	27	90	6	4.9	6.15	–	5.95	6.39	12
1/8-27	XXX	27	90	7	5.5	8.5	–	8.25	8.74	12
1/4-18	XXX	18	100	11	9	11.1	–	10.75	11.36	17.5
3/8-18	XXX	18	110	12	9	–	9/16	14.1	14.8	17.6
1/2-14	XXX	14	125	16	12	17.85	–	17.5	18.32	22.9
3/4-14	XXX	14	140	20	16	23.3	–	22.7	23.67	23
1-11,5	XXX	11.5	160	25	20	29	–	28.6	29.69	27.4

Rc | 55° | HSS E | DIN 2181 | DIN EN 10226-2 | C 3 | 1:16 | h9

Through and blind hole machine tap

The **short shank overhangs less and hence is more stable.**

Application: For use as machine tap or for cleaning existing threads by hand.
Tapered Whitworth pipe thread (**BSPT**) to **ISO 7/1** and **BS21,** for joints with sealant in the thread.
See the table for the specified minimum size of the tapping hole.

Recommendation: **Tapping hole Ø A:**
Pre-drill a plain hole **without using a reamer.**
Variant A can be used if there is no risk of sealing problems.
Tapping hole Ø B:
Pre-drill a plain hole and then **ream it using a 1:16 taper reamer (see No. 162650).**
The taper bore Ø can then be checked laterally by reference to the D_{max} check dimension (see table).
Variant B for drilling the tapping hole offers the best process reliability for the tapping operation and at the same time ensures the most reliable seal in the thread.

13 8120

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	GG(G)	CuZn	Uni
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	K	N	
13 8120	9	9		7	6	5										5	9	○

Rc	13 8120	Threads per inch	L_{tot}			Tapping hole Ø A	Tapping hole Ø B	Thread gauge Ø D_{max} JS11	Tapping hole minimum depth
	Machine tap		mm	mm	mm	mm	mm	mm	mm
1/8-28	XXX	28	63	7	5.5	8.15	8.1	8.57	11.1
1/4-19	XXX	19	63	11	9	10.85	10.75	11.45	16.3
3/8-19	XXX	19	70	12	9	14.3	14.25	14.95	16.7
1/2-14	XXX	14	80	16	12	17.8	17.7	18.63	22.3
3/4-14	XXX	14	100	20	16	23.2	23.1	24.12	23.6
1-11	XXX	11	110	25	20	29.2	29.1	30.29	28.3

EG-M | 60° | HSS E-PM | DIN 40435 | 6H mod. | E 1½ | 45° | h9 | ≤3×D

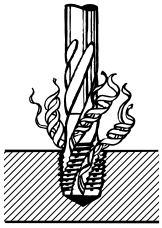
Blind hole machine tap for wire threaded inserts

Tap to **DIN 40435** (similar to DIN 371 / DIN 376).
Achieves outstanding tool life, due to high-quality substrate and TiCN coating. For wide application range of different materials.

Application: For production of AC mounting thread to metric ISO threads **DIN 8140** for **STI** (Screw Thread Insert) wire thread inserts.

Note: Please ensure without fail to state the correct **tapping drill Ø (see table)!**

13 8200

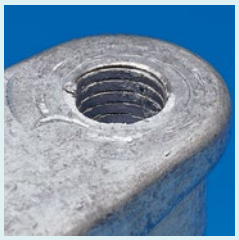


The thread can be cut right to the bottom of the hole.

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	CuZn	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	N						
13 8200		15		20	18	15	10							10			15	●		●	●		

EG-M	1H	13 8200					
		Machine tap for wire thread inserts					
		HSS-E-PM					
		TiCN	mm	mm	mm	mm	mm
EG-M3		XXX	0.5	63	4.5	3.4	3.15
EG-M4		XXX	0.7	70	6	4.9	4.2
EG-M5		XXX	0.8	80	6	4.9	5.25
EG-M6		XXX	1	90	8	6.2	6.3
EG-M8		XXX	1.25	100	10	8	8.4
EG-M10		XXX	1.5	100	9	7	10.5
EG-M12		XXX	1.75	110	11	9	12.5
EG-M16		XXX	2	125	14	11	16.5

HELICOIL® Plus made by BÖLLHOFF — Thread inserts and thread repairs

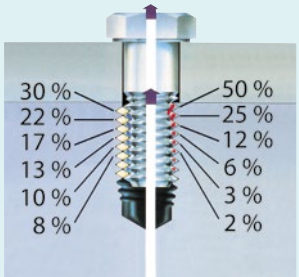


Thread inserts made of wire allow high-security fastenings even in low-strength metallic materials.
HELICOIL PLUS thread inserts are highly precise, corrosion-resistant and extremely capable of withstanding high temperatures.

Thread inserts and tools for thread repairs can be found in the Hoffmann Group Catalogue „Hand tools and Metrology" from No. 08 2800.

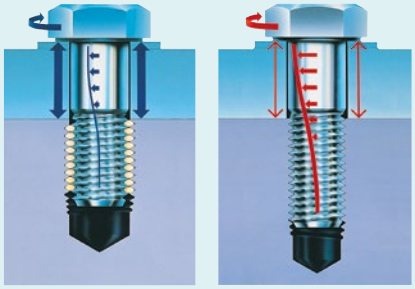
Due to their elastic characteristics HELICOIL PLUS thread inserts compensate to any angle errors and pitch errors that may be present.
Uniform tensile force distribution and ideal force transfer from the screw to nut thread is ensured by the optimised flank design.
The static and dynamic loading and also the fatigue strength of the screw connection is thus significantly higher.
A consistent pre-load force is achieved even for repetitive tightening.

Force distribution
Tensile force



with HeliCoil *without HeliCoil*

Screw-in depth



with HeliCoil *without HeliCoil*

M | 60° | DIN 2174 | DIN 13 | C ↔3↔ | h9 | ≤1.5×D

Fluteless machine tap without oil grooves

DIN 2174 (≈ DIN 371 ≤ M10; ≈ **DIN 376** ≥ M12**).**

13 9135/9142 – **Tolerance class:** ISO 3X / 6GX = **Oversize 0.02 – 0.04 mm.**

13 9115/9125/9135 – The **innovative polygon form** permits a wide application spectrum. The **multi-function layer structure** achieves **maximum service life** even in **high-tensile materials.**

13 9125/9132 – Size M1 - M1.4 – **tolerance class:** ISO 1X / 4HX

13 9125 Size M1,7; M2,3; M2,6 – with old DIN profile.

Application:

13 9135/9142 – For components which are **galvanised after threading** or which shrink slightly when hardened.

HSS E-PM | ISO 2X 6HX

13 9115

HSS E-PM | ISO 2X 6HX | ≥ M1.6

13 9125

HSS E | ISO 2X 6HX | ≥ M1.6

13 9132

HSS E-PM | ISO 3X 6GX

13 9135

HSS E | ISO 3X 6GX

13 9142

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	CuZn	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	N						
13 9115				32	27	22	17							12	7		22		●	●			
13 9125/9135	42	42		37	32	27	22	17						12			22	●	●	●			
13 9132/9142		23		23	22	22								11			12	●	●	●			

M	1H 13 9115 Garant	1H 13 9125 Garant	12H 13 9132 HOLEX	1H 13 9135 Garant	12H 13 9142 HOLEX		L_{tot}			Guide value
	Fluteless machine tap without oil grooves									
	HSS-E-PM 6HX	HSS-E-PM 6HX	HSS-E 6HX	HSS-E-PM 6GX	HSS-E 6GX					
	TiN	TiN	TiAlN	TiN	TiAlN	mm	mm	mm	mm	mm
M1	–	XXX	XXX	–	–	0.25	40	2.5	2.1	0.9
M1,2	–	XXX	XXX	–	–	0.25	40	2.5	2.1	1.1
M1,4	–	XXX	XXX	–	–	0.3	40	2.5	2.1	1.25
M1,6	–	XXX	XXX	–	–	0.35	40	2.5	2.1	1.45
M1,7	–	XXX	XXX	–	–	0.35	40	2.5	2.1	1.55
M2	XXX	XXX	XXX	XXX	XXX	0.4	45	2.8	2.1	1.85
M2,3	–	XXX	XXX	–	–	0.4	45	2.8	2.1	2.1
M2,5	XXX	XXX	XXX	–	–	0.45	50	2.8	2.1	2.3
M2,6	–	XXX	XXX	–	–	0.45	50	2.8	2.1	2.4
M3	XXX	XXX	XXX	XXX	XXX	0.5	56	3.5	2.7	2.8
M3,5	XXX	XXX	XXX	–	–	0.6	56	4	3	3.25
M4	XXX	XXX	XXX	XXX	XXX	0.7	63	4.5	3.4	3.7
M5	XXX	XXX	XXX	XXX	XXX	0.8	70	6	4.9	4.65
M6	XXX	XXX	XXX	XXX	XXX	1	80	6	4.9	5.55
M8	XXX	XXX	XXX	XXX	XXX	1.25	90	8	6.2	7.45
M10	XXX	XXX	XXX	XXX	XXX	1.5	100	10	8	9.35
M12	XXX	XXX	XXX	XXX	XXX	1.75	110	9	7	11.2
M16	XXX	XXX	XXX	–	–	2	110	12	9	15.1

M | 60° | DIN 2174 | DIN 13 | h9 | ≤3×D

Fluteless machine tap with oil grooves

DIN 2174 (≈ DIN 371 ≤ M10; ≈ DIN 376 ≥ M12). With oil grooves; optimum lubrication effect even in deeper threads.

13 9171 – Special **TiAlN coating,** highly suitable for **aluminium alloys.**

13 9178 Size M2,6 – With the old DIN profile.

13 9171–9187 – **Tolerance class:** ISO 2X/6HX.

13 9185 – **Form E** (lead-in: 1.5 – 2 turns) **for deep threads with short run-out**. The thread is tapped almost to the bottom of the hole.

13 9187 – **With internal coolant supply laterally from the grooves; permits maximum tool life when threading through holes and blind holes.**

13 9171–9178/9185–9190 – The **innovative polygon form** permits a wide application spectrum. The **multi-function layer structure** achieves **maximum service life** even in **high-tensile materials.**

13 9190/9192 – **Tolerance class:** ISO 3X / 6GX = **Oversize 0.02 – 0.04 mm.**

Application:

13 9190/9192 – For components which are **galvanised after threading** or which shrink slightly when hardened.

HSS E-PM | ISO 2X 6HX | C (3)

13 9171

HSS E-PM | ISO 2X 6HX | C (3)

13 9175

HSS E-PM | ISO 2X 6HX | C (3)

13 9178

HSS E | ISO 2X 6HX | C (3)

13 9182

HSS E-PM | ISO 2X 6HX | E (1½)

13 9185

HSS E-PM | ISO 2X 6HX | C (3)

13 9187

HSS E-PM | ISO 3X 6GX | C (3)

13 9190

HSS E | ISO 3X 6GX | C (3)

13 9192

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	CuZn	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	N						
13 9171	42	42	28	32										12			22		●	●			
13 9175				32	27	22	17							12	7		22		●	●			
13 9178/9190	42	42		37	32	27	22	17						12			22	●	●	●			
13 9182/9192		23		23	22	22								11			12	●	●	●			
13 9185	42	42	27	37	32	27	22	17						12			22	●	●	●			
13 9187	42	42	35	37	32	29	27	22						17			27	●	●	●			

M	11H 13 9171	11H 13 9175	11H 13 9178	12H 13 9182	11H 13 9185	11H 13 9187	11H 13 9190	12H 13 9192					
				Fluteless machine tap with oil grooves									
	HSS-E-PM Form C 6HX	HSS-E-PM Form C 6HX	HSS-E-PM Form C 6HX	HSS-E Form C 6HX	HSS-E-PM Form E 6HX	HSS-E-PM IC / Form C 6HX	HSS-E-PM Form C 6GX	HSS-E Form C 6GX		L_{tot}			Guide value
	TiAlN	TiN	TiN	TiAlN	TiN	TiN	TiN	TiAlN	mm	mm	mm	mm	mm
M2	XXX	XXX	XXX	XXX	–	–	XXX	XXX	0.4	45	2.8	2.1	1.85
M2,5	XXX	XXX	XXX	XXX	–	–	–	–	0.45	50	2.8	2.1	2.3
M2,6	–	–	XXX	XXX	–	–	–	–	0.45	50	2.8	2.1	2.4
M3	XXX	XXX	XXX	XXX	XXX	–	XXX	XXX	0.5	56	3.5	2.7	2.8
M3,5	–	XXX	XXX	XXX	XXX	–	–	–	0.6	56	4	3	3.25
M4	XXX	XXX	XXX	XXX	XXX	–	XXX	XXX	0.7	63	4.5	3.4	3.7
M5	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	0.8	70	6	4.9	4.65
M6	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	1	80	6	4.9	5.55
M8	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	1.25	90	8	6.2	7.45
M10	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	1.5	100	10	8	9.35
M12	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	1.75	110	9	7	11.2
M14	–	XXX	–	–	–	–	–	–	2	110	11	9	13.1
M16	XXX	XXX	XXX	XXX	XXX	XXX	–	–	2	110	12	9	15.1
M20	–	–	XXX	–	XXX	XXX	–	–	2.5	140	16	12	18.85

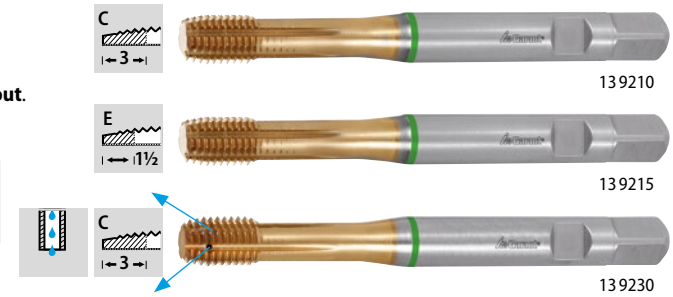
M | 60° | HSS E-PM | Standard | DIN 13 | ISO 2X 6HX | h6 DIN 1835 B | ≤2.5×D

HSS-E-PM synchronised fluteless tap with oil grooves

Special polygon geometry and shank to DIN 1835-B for machines with **synchronised spindle drive.**
With oil grooves; optimal lubrication effect even in deeper threads.
The **innovative polygon form** permits a wide application spectrum.
The **multi-function layered coating** achieves **maximum service life** even in **high-tensile materials** in **fixed** applications.

13 9215 – **Form E** (lead-in: 1.5 – 2 turns) **for deep threads with short run-out.**
13 9230 – **With internal coolant supply laterally from the grooves; permits maximum tool life.**

Note: **For use on synchronised spindles,** the **GARANT** quick-change tapping chuck **No. 338100 – 338121 with minimum length adjustment (MLA)** ensures the highest process reliability.



13 9210
13 9215
13 9230

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	CuZn	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	N						
13 9210/9215	45	45	40	45	37	35	32	22						10			35	●	●	●			
13 9230	48	48	45	50	42	40	37	27						10			40	●	●	●			

M	11H 13 9210	11H 13 9215	11H 13 9230					
	Synchronised fluteless machine tap with oil grooves							
	HSS-E-PM Form C	HSS-E-PM Form E	HSS-PM IC / Form C					
	TiN	TiN	TiN	mm	mm	mm	mm	mm
M2,5	XXX	XXX	–	0.45	70	6	4.9	2.3
M3	XXX	XXX	–	0.5	70	6	4.9	2.8
M4	XXX	XXX	XXX	0.7	70	6	4.9	3.7
M5	XXX	XXX	XXX	0.8	70	6	4.9	4.65
M6	XXX	XXX	XXX	1	80	6	4.9	5.55
M8	XXX	XXX	XXX	1.25	90	8	6.2	7.45
M10	XXX	XXX	XXX	1.5	100	10	8	9.35
M12	XXX	XXX	XXX	1.75	110	12	9	11.2
M16	XXX	XXX	XXX	2	110	12	9	15.1

M | 60° | Solid carbide | Standard | DIN 13 | ISO 2X 6HX | C 3 | h6 DIN 6535 HA | ≤3×D

Solid carbide synchronised fluteless machine tap with oil grooves

Special polygon geometry and shank to DIN 6535-HA
for use on machines with **synchronised spindle drives.**
With oil grooves; optimal lubrication effect even in deeper threads.
Special solid carbide tool material for high cutting speeds and long tool life.
TiAlN and anti-friction coating ensure low wear and low tendency to edge build-up.

13 9243 – **With internal coolant supply laterally from the grooves; recommended for through and blind holes.**
13 9244 – **With axial internal coolant supply;** advantageous / sufficient for **blind hole** machining.

Note: **For use on synchronised spindles,** the **GARANT** quick-change tapping chuck **No. 338100 – 338121 with minimum length adjustment (MLA)** ensures very high process reliability.

13 9242
13 9243
13 9244

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	Graphite GRP CRP	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	N						
13 9242	50	50	48	52	48	45	40	33											●	●			
13 9243/9244	53	53	50	55	50	47	43	36											●	●			

M	11H 13 9242	11H 13 9243	11H 13 9244					
	Synchronised fluteless machine tap with oil grooves							
	Solid carbide	Solid carbide IC	Solid carbide IC					
	TiAlN	TiAlN	TiAlN	mm	mm	mm	mm	mm
M2,5	XXX	–	–	0.45	50	6	4.9	2.3
M3	XXX	–	–	0.5	56	6	4.9	2.8
M4	XXX	–	–	0.7	63	6	4.9	3.7
M5	XXX	XXX	XXX	0.8	70	6	4.9	4.65
M6	XXX	XXX	XXX	1	80	6	4.9	5.55
M8	XXX	XXX	XXX	1.25	90	8	6.2	7.45
M10	XXX	XXX	XXX	1.5	100	10	8	9.35
M12	XXX	XXX	XXX	1.75	110	12	9	11.2

MF | 60° | DIN 2174 | DIN 13 | ISO 2X 6HX | C ←3→ | h9 | ≤3×D

Fluteless machine tap with oil grooves

DIN 2174 (≈ DIN 374). **With oil grooves; optimum lubrication effect even in deeper threads.**

13 9372 – High performance **TiAlN and anti-friction coating** for correspondingly longer tool life.

13 9260/9265 – The **innovative polygon form** permits a wide application spectrum. The **multi-function layer structure** achieves **maximum service life** even in **high-tensile materials.**

HSS E-PM

13 9260

HSS E-PM

13 9265

HSS E

13 9372

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	CuZn	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	N						
13 9260				32	27	22	17							12	7		22		●	●			
13 9265	42	42		37	32	27	22	17						12			22	●	●	●			
13 9372		23		23	22	22								11			12	●	●	●			

M× pitch	11H 13 9260	11H 13 9265	12H 13 9372	L_{tot}			Guide value
	Garant		HOLEX				
	Fluteless machine tap with oil grooves						
	HSS-E-PM TiN	HSS-E-PM TiN	HSS-E TiAlN	mm	mm	mm	mm
6×0,75	–	XXX	XXX	80	4.5	3.4	5.65
8×1	XXX	XXX	XXX	90	6	4.9	7.55
10×1	XXX	XXX	XXX	90	7	5.5	9.55
12×1	XXX	XXX	XXX	100	9	7	11.55
12×1,5	XXX	XXX	XXX	100	9	7	11.35
16×1,5	XXX	XXX	XXX	100	12	9	15.35
18×1,5	–	XXX	XXX	110	14	11	17.35
20×1,5	XXX	XXX	XXX	125	16	12	19.35

G | 55° | DIN 2189 | ISO 228 X | C ←3→ | h9 | ≤3×D

Fluteless machine tap with oil grooves

DIN 2189 (≈ DIN 5156). **With oil grooves; optimum lubrication effect even in deeper threads.**

13 9395 – Special **TiAlN coating**, highly suitable **for aluminium alloys.**

13 9472 – High performance **TiAlN and anti-friction coating** for correspondingly longer tool life.

13 9395–9405 – The **innovative polygon form** permits a wide application spectrum. The **multi-function layer structure** achieves **maximum service life** even in **high-tensile materials.**

Application: For **Whitworth parallel pipe threads** DIN-ISO 228/1 (threads that do not form a seal within the connection).

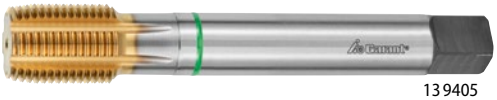
HSS E-PM

13 9395

HSS E-PM

13 9400

HSS E-PM



13 9405

HSS E

13 9472

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	CuZn	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	N						
13 9395	42	42	28	32															●	●			
13 9400				32	27	22	17							12	7		22		●	●			
13 9405	42	42		37	32	27	22	17						12			22	●	●	●			
13 9472		23		23	22	22								11			12	●	●	●			

inch	11H 13 9395	11H 13 9400	11H 13 9405	12H 13 9472	Threads per inch	Thread Ø	L_{tot}			Guide value
	Garant			HOLEX						
	Fluteless machine tap with oil grooves									
	HSS-E-PM TiAlN	HSS-E-PM TiN	HSS-E-PM TiN	HSS-E TiAlN		mm	mm	mm	mm	mm
G1/8	XXX	XXX	XXX	XXX	28	9.73	90	7	5.5	9.25
G1/4	XXX	XXX	XXX	XXX	19	13.16	100	11	9	12.55
G3/8	XXX	XXX	XXX	XXX	19	16.66	100	12	9	16.05
G1/2	XXX	XXX	XXX	XXX	14	20.96	125	16	12	20.05

M | M-LH | 60° | Solid carbide | DIN 13 | h6 DIN 6535 HA | 2 | 90°

Garant

Micro-grain solid carbide drill thread milling cutter with countersink

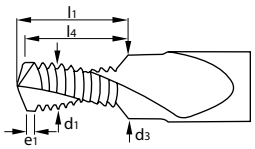
Corrected thread profile for milling **exact internal threads**
(be sure to provide stable clamping conditions).
Incorporating a countersink profile for a 90° countersink.
A stronger core diameter, two narrow geometrically optimised chip flutes
and a special drill point result in good chip formation and low cutting pressure.
Advantage: **Drilling, countersinking and thread milling all with a single tool!**

≤1.5×D

13 9510

≤2×D

13 9515



Feed rate reference values for drilling (for aluminium castings with > 10° Si)

Size = M	M4	M5	M6	M8	M10	M12
f = mm/rev	0.1	0.15	0.2	0.25	0.27	0.3

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	CuZn					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	K	N					
13 9510/9515		220	220														90	330		●			

M	13 9510	13 9515													
	Drill thread milling cutter			d_1	l_4		L_s	L_{tot}			maximum countersink Ø d_3	Programming value for countersink l_1		Width of groove e_1	Alu cast > 10 % Si f_z
	1.5×D	2×D			13 9510	13 9515		13 9510	13 9515			13 9510	13 9515		
	TiAlN	TiAlN	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
M4	XXX	XXX	0.7	3.24	6.8	8.9	36	47	49	6	4.3	7.3	9.4	0.7	0.03
M5	XXX	XXX	0.8	4.1	8.5	10.9	36	53	55	6	5.3	9.2	11.6	0.8	0.04
M6	XXX	XXX	1	4.85	10.2	13.7	36	59	62	8	6.3	11.5	14.5	1	0.05
M8	XXX	XXX	1.25	6.45	13.4	17.2	40	70	74	10	8.3	14.4	18.2	1.25	0.065
M10	XXX	XXX	1.5	8.08	17.6	22.1	45	75	79	12	10.3	18.9	23.4	1.5	0.065
M12	–	XXX	1.75	9.74	–	25.5	45	–	89	14	12.3	–	27.1	1.5	0.08

M | M-LH | 60° | Solid carbide | DIN 13 | h6 DIN 6535 HA | ≤2×D

4 | 5 | 6

Garant

Micro-grain solid carbide single tooth thread mill

Corrected thread profile for milling **exact internal threads** (ensure stable clamping conditions).
Very sturdy **single-tooth** thread mill, **highly suitable especially for GRP, CRP, and graphite**.
Also suitable for **Ti-based and Ni-based alloys** and **hardened steels up to 63 HRC**.
Advantage: **Significantly less radial pressure than with multi-tooth thread mills.**

Note: Single-tooth thread mill **exclusively** for **milling internal threads. The tapping hole (and where necessary the countersinking) has to be prepared beforehand!**

13 9610

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 67 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GRP	CRP	Graphite	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	M	M	S	N	N	N						
13 9610	300	300	200	300	250	200	100	80	60	40	30	100	80	60	100	100	150	●		●	●	●	●

M	13 9610										
	Single tooth thread mill		d_1	l_1	L_s	L_{tot}		No. of teeth Z	< 1400 N f_z	CRP f_z	
	2×D										
	TiAlN	mm	mm	mm	mm	mm	mm		mm	mm	
M1	XXX	0.25	0.74	3	18	32	3	4	0.01	0.02	
M1,2	XXX	0.25	0.9	3.5	18	32	3	4	0.01	0.02	
M1,4	XXX	0.3	1	3.5	18	32	3	4	0.01	0.02	
M1,6	XXX	0.35	1.2	4	18	32	3	4	0.01	0.02	
M1,8	XXX	0.35	1.35	4	18	32	3	4	0.01	0.02	
M2	XXX	0.4	1.5	4	18	32	3	4	0.01	0.02	
M2,5	XXX	0.45	1.9	6	18	32	3	5	0.01	0.02	
M3	XXX	0.5	2.4	6	18	32	3	5	0.01	0.02	
M3,5	XXX	0.6	2.8	6	18	32	3	6	0.01	0.02	
M4	XXX	0.7	3.2	8	28	40	5	6	0.02	0.04	
M5	XXX	0.8	4.1	9	28	40	5	6	0.028	0.05	
M6	XXX	1	4.9	9	28	40	5	6	0.035	0.06	

M | M-LH | 60° | Solid carbide | DIN 13 | h6 DIN 6535 HA | ≤3×D | ≥ M8 | 1 | 2 | 3 | 4 | 5

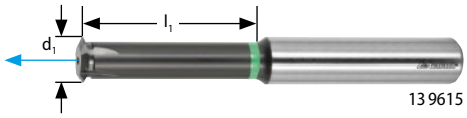
GARANT

Micro-grain solid carbide single tooth thread mill

Corrected thread profile for milling **exact internal threads,** (ensure stable clamping conditions).
Very sturdy **single-tooth** thread mills, **highly suitable especially for GRP, CRP and graphite.**
Also suitable for **Ti-based and Ni-based alloys** and **hardened steels up to 58 HRC.**

Size M8–M16 – **Internal coolant feed.**

Advantage: **Significantly less radial pressure than with multi-tooth thread mills.**



13 9615

Note: Single-tooth thread mill **exclusively** for **milling internal threads.**
The tapping hole (and where necessary the countersinking) has to be prepared beforehand!
Because of the tooth profile only the thread nominal Ø (= size) with the corresponding thread pitch (see table) may be generated.

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GRP	CRP	Graphite	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	M	M	S	N	N	N						
13 9615	300	300	200	200	150	120	80	60	50	30		80	60	50	100	100	150	●		●	●	●	●

M	11J 13 9615 Single tooth thread mill 3×D TiAlN		d_1	l_1	L_s	L_{tot}		No. of teeth Z	< 1400 N f_z	CRP f_z
		mm	mm	mm	mm	mm	mm		mm	mm
M1	XXX	0.25	0.7	3	28	39	3	1	0.01	0.02
M1,6	XXX	0.35	1.18	4.8	28	39	3	2	0.01	0.02
M2	XXX	0.4	1.52	6	28	39	3	3	0.01	0.02
M2,5	XXX	0.45	1.96	7.5	28	39	3	3	0.01	0.02
M3	XXX	0.5	2.4	9	28	41	3	3	0.01	0.02
M4	XXX	0.7	3.15	12	28	44	4	3	0.02	0.04
M5	XXX	0.8	4.04	15	36	56	6	4	0.028	0.05
M6	XXX	1	4.8	18	36	59	6	4	0.035	0.06
M8	XXX	1.25	6.5	24	36	65	8	5	0.04	0.08
M10	XXX	1.5	8.2	31.5	40	77	10	5	0.04	0.08
M12	XXX	1.75	9.9	37.7	40	82	10	5	0.08	0.16
M14	XXX	2	11.6	42	45	94	12	5	0.08	0.16
M16	XXX	2	13.6	48	45	100	14	5	0.08	0.16

M | M-LH | 60° | Solid carbide | DIN 13 | h6 DIN 6535 HA | ≠ | ≥ M4 | 4 | 6

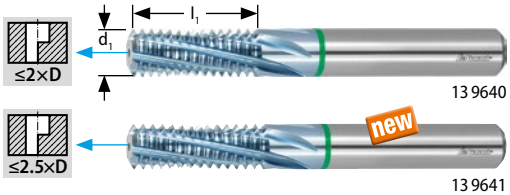
GARANT

GARANT Master TM solid carbide plain shank thread mill

Solid carbide thread milling cutters **with irregular cutting edge spacing and an increased number of cutting edges**. Due to the **irregular cutting edge spacing** they achieve **very smooth running** and **long tool life**. **Newly developed universal geometry** and **high-performance coating** for use across a wide spectrum of materials.

- **Significantly reduced vibration** due to **irregular cutting edge spacing**
- **Increased number of cutting edges**
- **New coating** for optimum **wear resistance**
- **Corrected thread profile** for avoidance of profile distortions

Through-coolant feed ≥ M4



13 9640
13 9641

Note: Form HB and HE supplied at the same price as HA.
Form **HB**: order with **No. 139640 / 136941 + 129100 HB**
Form **HE**: order with **No. 139640 /136941 + 129100 HE.**

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	TOOLOX 33 HRC	TOOLOX 44 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	CuZn	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	M	M	S	K	N						
13 9640	220	220	180	140	130	120	90	80	45		85	50	82	75	50	120	200	●		●	●		●
13 9641	200	190	160	125	115	110	80	70					75	70	45	105	175	●		●	●		●

M	11D 13 9640 GARANT Master TM plain shank thread mill 2×D TiAlN	11D 13 9641 2.5×D TiAlN		d_1	l_1		L_s	L_{tot}			No. of teeth Z	< 750 N f_z
					13 9640	13 9641		13 9640	13 9641	mm		mm
			mm	mm	mm	mm	mm	mm	mm			
M3	XXX	XXX	0.5	2.33	6.25	7.73	36	58	58	6	4	0.01
M4	XXX	XXX	0.7	3.1	8.05	10.13	36	58	58	6	4	0.02
M5	XXX	XXX	0.8	3.9	10.8	13.17	36	58	64	6	4	0.035
M6	XXX	XXX	1	4.7	12.5	15.47	36	64	64	6	4	0.05
M8	XXX	XXX	1.25	5.95	16.88	20.58	36	64	68	6	4	0.06
M10	XXX	XXX	1.5	7.95	20.25	26.2	36	68	74	8	6	0.075
M12	XXX	XXX	1.75	9.8	25.38	30.75	40	82	84	10	6	0.09
M14	XXX	XXX	2	11.5	29	37.08	45	82	96	12	6	0.1
M16	XXX	XXX	2	11.95	33	40.93	45	92	100	12	6	0.11
M20	XXX	XXX	2.5	13.95	41.25	51.15	45	102	112	14	6	0.13
M24	XXX	XXX	3	19.95	49.5	61.41	50	120	130	20	6	0.15

M | M-LH | 60° | Solid carbide | DIN 13 | h6 DIN 6535 HA | ≤2×D

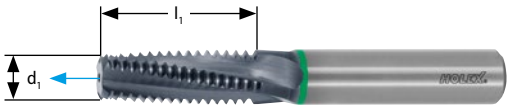
2 | 3 | 4

≥ M8

HOLEX Micrograin solid carbide plain shank thread mill

Corrected thread profile for milling **exact internal threads** (ensure stable clamping conditions).

Size M8–M20 – **Internal coolant feed.**



13 9651

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	CuZn	Uni
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	M	M	S	K	N	
13 9651	220	220	170	170	150	120	80						80	60	60	120	180	●

M	12J	13 9651	d_1	l_1	L_s	L_{tot}		No. of teeth Z	< 900 N f_z
		Plain shank thread mill 2×D TiAlN	mm	mm	mm	mm	mm		mm
M3		XXX	2.4	6.25	28	42	4	2	0.01
M4		XXX	3.15	8.75	36	55	6	3	0.012
M5		XXX	4	10.8	36	55	6	3	0.015
M6		XXX	4.8	12.5	36	55	6	3	0.02
M8		XXX	5.95	16.85	36	60	6	3	0.035
M10		XXX	7.95	21.75	36	70	8	3	0.035
M12		XXX	9.9	27.1	40	75	10	4	0.04
M14		XXX	11.6	31	45	85	12	4	0.045
M16		XXX	11.95	35	45	85	12	4	0.05
M20		XXX	15.95	41.25	48	90	16	4	0.055

M | M-LH | 60° | Solid carbide | DIN 13 | h6 DIN 6535 HA | ≤1.5×D | 90°

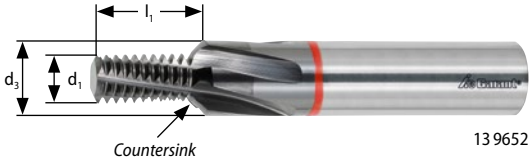
3 | 4 | 5

Garant Micro-grain solid carbide thread mill with countersink

Corrected thread profile for milling **exact internal threads** (ensure stable clamping conditions).

Incorporating a **countersink profile** for a 90° countersink.

Advantage: **Countersinking and thread milling in one operation!**



13 9652

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	Graphite GRP CRP	Uni
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	N	
13 9652								30	35	30	27	25						●

M	11J	13 9652	d_1	L_s	L_{tot}		maximum countersink Ø d_3	Programming value for countersink l_1	No. of teeth Z	< 60 HRC f_z
		Plain shank thread mill 1.5×D TiAlN	mm	mm	mm	mm	mm	mm		mm
M3		XXX	2.44	28	40	6	3.3	4.66	3	0.006
M4		XXX	3.14	36	47	6	4.5	6.5	4	0.008
M5		XXX	3.95	36	52	6	5.5	8.2	4	0.01
M6		XXX	4.68	36	59	8	6.6	10.2	4	0.012
M8		XXX	6.22	40	70	10	9	14.1	4	0.015
M10		XXX	7.79	45	74	12	11	16.9	5	0.017
M12		XXX	9.37	45	82	14	13.5	19.7	5	0.018
M14		XXX	10.92	48	96	16	15.5	24.5	5	0.019
M16		XXX	12.82	48	94	18	17.5	26.5	5	0.02

M | M-LH | 60° | Solid carbide | DIN 13 | h6 DIN 6535 HA | 90° | 4 | 6

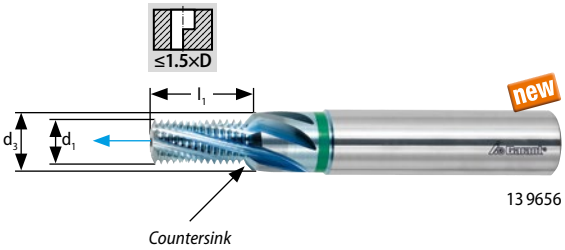
GARANT Master TM solid carbide plain shank thread mill with countersinking step

Solid carbide thread milling cutters **with irregular cutting edge spacing and an increased number of cutting edges**.
Due to the **irregular cutting edge spacing** they achieve **very smooth running** and **long tool life**.
Newly developed universal geometry and **high-performance coating** for use across a wide spectrum of materials.

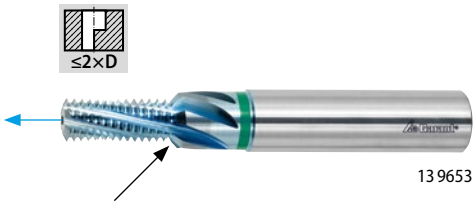
- **Significantly reduced vibration** due to **irregular cutting edge spacing**
- **Increased number of cutting edges**
- **New coating** for optimum **wear resistance**
- **Corrected thread profile** for avoidance of profile distortions

Advantage: Incorporating a countersink profile for a 90° countersink and thread milling in a single operation.

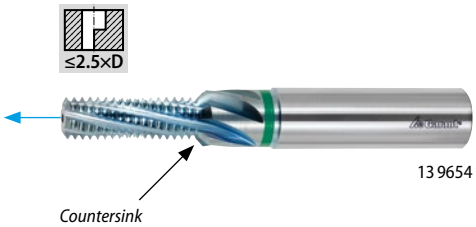
Note:
Form HB and HE supplied at the same price as HA.
Form **HB**: order with **No. 139656 + 129100 HB**
Form **HE**: order with **No. 139656 + 129100 HE**
Form **HB**: order with **No. 139653 + 129100 HB**
Form **HE**: order with **No. 139653 + 129100 HE**
Form **HE**: order with **No. 139654 + 129100 HE**
Form **HE**: order with **No. 139654 + 129100 HE**.



13 9656



13 9653



13 9654

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	TOOLOX® 33 HRC	TOOLOX® 44 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	CuZn	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	M	M	S	K	N						
13 9653/9656	220	220	180	140	130	120	90	80	45		85	50	82	75	50	120	200	●		●	●		●
13 9654	200	190	160	125	115	110	80	70					75	70	45	105	175	●		●	●		●

M	13 9656	13 9653	13 9654												
	GARANT Master TM plain shank thread mill with countersink														
	1.5×D	2×D	2.5×D												
	TiAlN	TiAlN	TiAlN												
					d_1	L_s	L_{tot}			maximum countersink Ø d_3	Programming value for countersink l_1			No. of teeth Z	< 750 N f_z
							13 9656 13 9653	13 9654			13 9656	13 9653	13 9654		
				mm	mm	mm	mm	mm	mm	mm	mm	mm	mm		mm
M4	XXX	XXX	XXX	0.7	3.1	36	58	58	6	4.5	6.5	8.75	10.85	4	0.02
M5	XXX	XXX	XXX	0.8	3.9	36	58	64	6	5.5	8.2	11.6	14	4	0.035
M6	XXX	XXX	XXX	1	4.7	36	68	68	8	6.5	10.2	13.4	16.4	4	0.05
M8	XXX	XXX	XXX	1.25	6.4	40	75	75	10	8.5	14.1	17.93	21.68	4	0.06
M10	XXX	XXX	XXX	1.5	8.1	45	82	92	12	10.5	16.9	21.45	27.45	6	0.075
M12	XXX	XXX	XXX	1.75	9.8	45	94	94	14	12.5	19.7	26.73	31.98	6	0.09
M14	XXX	XXX	XXX	2	11.5	48	106	106	16	14.5	24.5	30.5	36.5	6	0.1
M16	XXX	XXX	XXX	2	13.4	48	108	108	18	16.5	26.5	34.55	42.55	6	0.11

MF | MF-LH | 60° | Solid carbide | DIN 13 | h6 DIN 6535 HA | ≤2×D | ≠

≥ 4×0,5 | 4 | 6

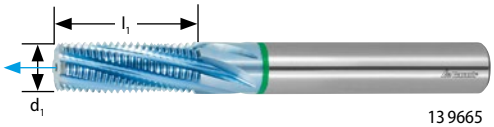
GARANT Master TM solid carbide plain shank thread mills

Solid carbide thread milling cutters **with irregular cutting edge spacing and an increased number of cutting edges**. Due to the **irregular cutting edge spacing** they achieve **very smooth running** and **long tool life**.
Newly developed universal geometry and **high-performance coating** for use across a wide spectrum of materials.

- **Significantly reduced vibration** due to **irregular cutting edge spacing**
- **Increased number of cutting edges**
- **New coating** for optimum **wear resistance**
- **Corrected thread profile** for avoidance of profile distortions

Through-coolant feed ≥ 4×0.5

Note: Form HB and HE supplied at the same price as HA.
Form **HB**: order with **No. 139665 + 129100 HB**
Form **HE**: order with **No. 139665 + 129100 HE**



13 9665

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	TOOLOX® 33 HRC	TOOLOX® 44 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	CuZn	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	M	M	S	K	N						
13 9665	220	220	180	140	130	120	90	80	45		85	50	82	75	50	120	200	●		●	●		●

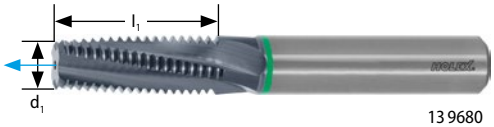
M × pitch	11D 13 9665 GARANT Master TM plain shank thread mill 2×D TiAlN		d_1	l_1	L_s	L_{tot}		No. of teeth Z	< 750 N f_z
		mm	mm	mm	mm	mm	mm		mm
3×0,35	XXX	0.35	2.45	6.13	36	58	6	4	0.01
4×0,5	XXX	0.5	3.29	8.25	36	58	6	4	0.02
5×0,5	XXX	0.5	4.1	10.25	36	58	6	4	0.035
6×0,75	XXX	0.75	4.9	12.38	36	58	6	4	0.05
8×0,75	XXX	0.75	5.95	16.13	36	64	6	4	0.06
8×1	XXX	1	5.95	16.5	36	64	6	4	0.06
10×1	XXX	1	7.95	20.5	36	68	8	6	0.075
10×1,25	XXX	1.25	7.95	20.63	36	68	8	6	0.075
12×1	XXX	1	9.95	24.5	40	82	10	6	0.09
12×1,5	XXX	1.5	9.95	24.75	40	82	10	6	0.09
14×1,5	XXX	1.5	11.95	29.25	45	92	12	6	0.1
16×1,5	XXX	1.5	13.9	32.25	45	94	14	6	0.11
18×1,5	XXX	1.5	15.9	36.75	48	106	16	6	0.11
20×1,5	XXX	1.5	15.95	41.25	48	106	16	6	0.13

MF | MF-LH | 60° | Solid carbide | DIN 13 | h6 DIN 6535 HA | ≤2×D

≥ 8×1 | 3 | 4

Micrograin solid carbide plain shank thread mill

Corrected thread profile for milling **exact internal fine threads** (ensure stable clamping conditions).
Size 8×1–20×1,5 – **Internal coolant feed.**



13 9680

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	CuZn	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	M	M	S	K	N						
13 9680	220	220	170	170	150	120	80						80	60	60	120	180	●		●			

M×pitch	12J 13 9680 Plain shank thread mill 2×D TiAlN		d_1	l_1	L_s	L_{tot}		No. of teeth Z	< 900 N f_z
		mm	mm	mm	mm	mm	mm		mm
5×0,5	XXX	0.5	4	10.25	36	55	6	3	0.018
6×0,75	XXX	0.75	4.8	12.38	36	55	6	3	0.02
8×1	XXX	1	5.95	16.5	36	60	6	3	0.035
10×1	XXX	1	7.95	20.5	36	70	8	3	0.035
10×1,25	XXX	1.25	7.95	20.6	36	70	8	3	0.035
12×1	XXX	1	9.9	26.5	40	75	10	4	0.04
12×1,5	XXX	1.5	9.9	26.2	40	75	10	4	0.04
14×1,5	XXX	1.5	11.6	30.7	45	85	12	4	0.045
16×1,5	XXX	1.5	11.95	33.7	45	85	12	4	0.05
18×1,5	XXX	1.5	13.95	41.2	45	90	14	4	0.05
20×1,5	XXX	1.5	15.95	41.2	48	90	16	4	0.055

MF | MF-LH | 60° | Solid carbide | DIN 13 | h6 DIN 6535 HA | 90° | 4 | 6

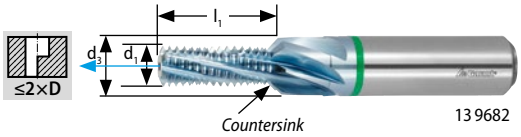
GARANT Master TM solid carbide plain shank thread mills with countersink

Solid carbide thread milling cutters **with irregular cutting edge spacing and an increased number of cutting edges**. Due to the **irregular cutting edge spacing** they achieve **very smooth running** and **long tool life**.
Newly developed universal geometry and **high-performance coating** for use across a wide spectrum of materials.

- **Significantly reduced vibration** due to **irregular cutting edge spacing**
- **Increased number of cutting edges**
- **New coating** for optimum **wear resistance**
- **Corrected thread profile** for avoidance of profile distortions

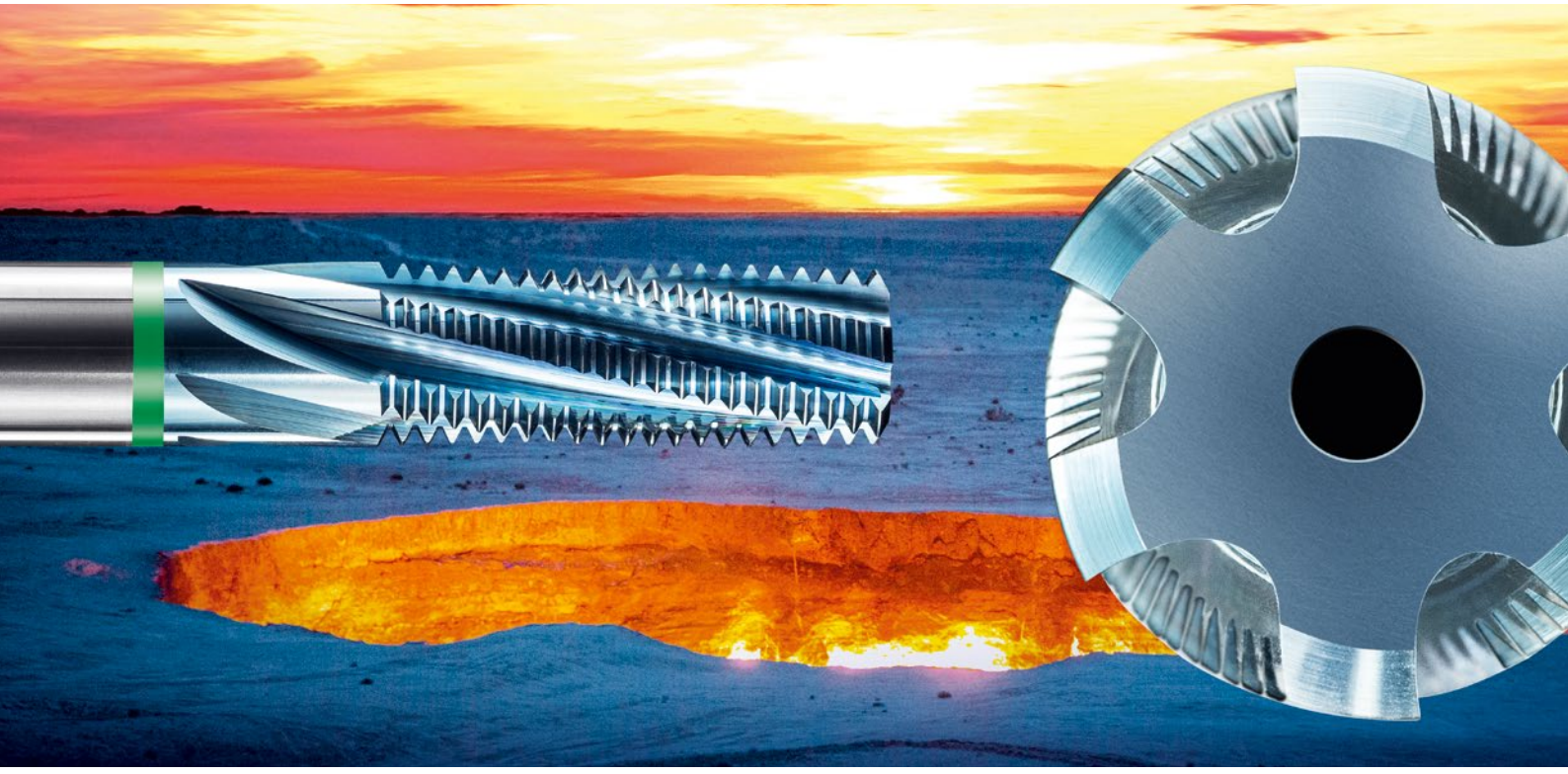
Advantage: Incorporating a countersink profile for a 90° countersink and thread milling in a single operation.

Note:
Form HB and HE supplied at the same price as HA
Form **HB**: order with **No. 139682 + 129100 HB**
Form **HE**: order with **No. 139682 + 129100 HE**
Form **HB**: order with **No. 139683 + 129100 HB**
Form **HE**: order with **No. 139683 + 129100 HE**



Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 50 HRC	< 55 HRC	TOOLOX® 33 HRC	TOOLOX® 44 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	CuZn	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	M	M	S	K	N						
13 9682	220	220	180	140	130	120	90	80	45		85	50	82	75	50	120	200	●		●	●		●
13 9683	200	190	160	125	115	110	80	70					75	70	45	105	175	●		●	●		●

M×pitch	11D 13 9682	11D 13 9683		d_1	L_s	L_{tot}			maximum countersink ∅ d_3	Programming value for countersink l_1		No. of teeth Z	< 750 N f_z
	GARANT Master TM plain shank thread mill with countersink												
	2×D	2.5×D				13 9682	13 9683			13 9682	13 9683		
	TiAlN	TiAlN	mm	mm	mm	mm	mm	mm	mm	mm	mm		mm
4×0,5	XXX	XXX	0.5	3.29	36	58	58	6	4.5	8.86	10.86	4	0.02
5×0,5	XXX	XXX	0.5	4.1	36	58	64	6	5.5	10.95	13.95	4	0.035
6×0,75	XXX	XXX	0.75	4.9	36	68	68	8	6.5	13.18	16.18	4	0.05
8×0,75	XXX	XXX	0.75	6.8	40	75	75	10	8.5	16.98	21.48	4	0.06
8×1	XXX	XXX	1	6.6	40	75	75	10	8.5	17.45	21.45	4	0.06
10×1	XXX	XXX	1	8.5	45	82	92	12	10.5	21.5	26.5	6	0.075
10×1,25	XXX	XXX	1.25	8.3	45	82	92	12	10.5	21.73	26.73	6	0.075
12×1	XXX	XXX	1	10.4	45	94	94	14	12.5	25.55	31.55	6	0.09
12×1,5	XXX	XXX	1.5	10	45	94	94	14	12.5	26	32	6	0.09
14×1,5	XXX	XXX	1.5	12	48	106	106	16	14.5	30.5	36.5	6	0.1
16×1,5	XXX	XXX	1.5	13.9	48	108	108	18	16.5	33.55	42.55	6	0.11



G | G-LH | 55° | Solid carbide | h6 DIN 6535 HA | ≤2×D | ≠

4 | 6

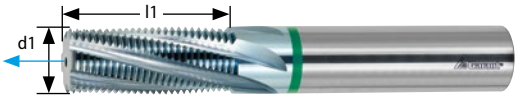
GARANT Master TM solid carbide plain shank thread mills

Solid carbide thread milling cutters **with irregular cutting edge spacing and an increased number of cutting edges**. Due to the **irregular cutting edge spacing** they achieve **very smooth running** and **long tool life**.
Newly developed universal geometry and **high-performance coating** for use across a wide spectrum of materials.

- **significantly reduced vibration** due to **irregular cutting edge spacing**
- **increased number of cutting edges**
- **new coating** for optimum **wear resistance**
- **corrected thread profile** for avoidance of profile distortions

Application: For **Whitworth parallel pipe threads** DIN-ISO 228/1 (threads that do not form a seal within the connections).

Note: Form HB and HE supplied at the same price as HA.
Form **HB**: order with **No. 139705 + 129100 HB**
Form **HE**: order with **No. 139705 + 129100 HE**



13 9705

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 50 HRC	< 55 HRC	TOOLOX 33 HRC	TOOLOX 44 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	CuZn	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	M	M	S	K	N						
13 9705	220	220	180	140	130	120	90	80	45		85	50	82	75	50	120	200	●		●	●		●

inches	11D	13 9705 GARANT Master TM plain shank thread mill 2×D TiAlN		Threads per inch	d_1	l_1	L_s	L_{tot}		No. of teeth Z	< 750 N f_z
					mm	mm	mm	mm	mm		mm
G1/16		XXX	2.0×D	28	5.95	15.87	36	64	6	4	0.06
G1/8		XXX	2.0×D	28	7.95	19.5	36	68	8	4	0.075
G1/4		XXX	2.0×D	19	9.95	27.41	40	82	10	6	0.1
G3/8		XXX	2.0×D	19	13.95	34.09	45	94	14	6	0.11
G1/2		XXX	2.0×D	14	15.95	42.63	48	106	16	6	0.13
G3/4		XXX	1.5×D	14	17.95	40.82	48	108	18	6	0.15
G1		XXX	1.5×D	11	19.95	51.95	50	120	20	6	0.17

G | G-LH | 55° | Solid carbide | h6 DIN 6535 HA | ≤2×D | ≠ | 90°

4 | 6

GARANT Master TM solid carbide plain shank thread mills with countersink

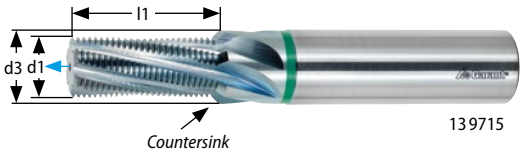
Solid carbide thread milling cutters **with irregular cutting edge spacing and an increased number of cutting edges**. Due to the **irregular cutting edge spacing** they achieve **very smooth running** and **long tool life**.
Newly developed universal geometry and **high-performance coating** for use across a wide spectrum of materials.

- **significantly reduced vibration** due to **irregular cutting edge spacing**
- **increased number of cutting edges**
- **new coating** for optimum **wear resistance**
- **corrected thread profile** for avoidance of profile distortions

Advantage: Incorporating a countersink profile for a 90° countersink and thread milling in a single operation.

Application: For **Whitworth parallel pipe threads** DIN-ISO 228/1 (threads that do not form a seal within the connections).

Note: Form HB and HE supplied at the same price as HA.
Form **HB**: order with **No. 139715 + 129100 HB**
Form **HE**: order with **No. 139715 + 129100 HE**



13 9715

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 50 HRC	< 55 HRC	TOOLOX 33 HRC	TOOLOX 44 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	CuZn	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	M	M	S	K	N						
13 9715	220	220	180	140	130	120	90	80	45		85	50	82	75	50	120	200	●		●	●		●

inches	11D	13 9715 GARANT Master TM plain shank thread mill with countersink 2×D TiAlN	Threads per inch	d_1	L_s	L_{tot}		maximum countersink Ø d_3	Programming value for countersink l_1	No. of teeth Z	< 750 N f_z
				mm	mm	mm	mm	mm	mm		mm
G1/16		XXX	28	6.2	40	75	10	8.3	16.92	4	0.06
G1/8		XXX	28	8.1	45	82	12	10.3	20.6	4	0.075
G1/4		XXX	19	11	45	94	14	13.7	28.76	6	0.1
G3/8		XXX	19	14.4	48	108	18	17.2	35.49	6	0.11

UNC | UNC-LH | 60° | Solid carbide | h6 DIN 6535 HA | ≤2×D

4 | 6

GARANT Master TM solid carbide plain shank thread mills

Solid carbide thread milling cutters **with irregular cutting edge spacing and an increased number of cutting edges**. Due to the **irregular cutting edge spacing** they achieve **very smooth running** and **long tool life**.
Newly developed universal geometry and **high-performance coating** for use across a wide spectrum of materials.

- **Significantly reduced vibration** due to **irregular cutting edge spacing**
- **Increased number of cutting edges**
- **New coating** for optimum **wear resistance**
- **Corrected thread profile** for avoidance of profile distortions

Application: For **UNC unified coarse threads** ASME-B1.1.

Note: Form HB and HE supplied at the same price as HA.
Form **HB**: order with **No. 139722 + 129100 HB**
Form **HE**: order with **No. 139722 + 129100 HE**

13 9722

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 50 HRC	< 55 HRC	TOOLOX® 33 HRC	TOOLOX® 44 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	CuZn	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	M	M	S	K	N						
13 9722	220	220	180	140	130	120	90	80	45		85	50	82	75	50	120	200	●		●	●		●

UNC	11D 13 9722 GARANT Master TM plain shank thread mill 2×D TiAlN	Threads per inch	d_1 mm	l_1 mm	L_s mm	L_{tot} mm	mm	No. of teeth Z	< 750 N f_z
10-24	XXX	24	3.55	10.02	36	58	6	4	0.03
1/4-20	XXX	20	4.7	13.29	36	64	6	4	0.05
5/16-18	XXX	18	5.95	16.18	36	64	6	4	0.06
3/8-16	XXX	16	7.5	19.8	36	68	8	4	0.07
7/16-14	XXX	14	7.95	22.6	36	70	8	6	0.08
1/2-13	XXX	13	9.95	26.31	40	82	10	6	0.09
9/16-12	XXX	12	11.6	28.51	45	92	12	6	0.1
5/8-11	XXX	11	11.95	33.39	45	92	12	6	0.11
3/4-10	XXX	10	13.95	39.31	45	102	14	6	0.13
7/8-9	XXX	9	15.95	46.43	48	110	16	6	0.14
1-8	XXX	8	19.95	52.26	50	120	20	6	0.15

UNC | UNC-LH | 60° | Solid carbide | h6 DIN 6535 HA | ≤2×D | 90°

4 | 6

GARANT Master TM solid carbide plain shank thread mills with countersink

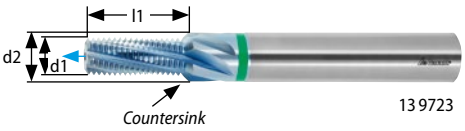
Solid carbide thread milling cutters **with irregular cutting edge spacing and an increased number of cutting edges**. Due to the **irregular cutting edge spacing** they achieve **very smooth running** and **long tool life**.
Newly developed universal geometry and **high-performance coating** for use across a wide spectrum of materials.

- **Significantly reduced vibration** due to **irregular cutting edge spacing**
- **Increased number of cutting edges**
- **New coating** for optimum **wear resistance**
- **Corrected thread profile** for avoidance of profile distortions

Advantage: Incorporating a countersink profile for a 90° countersink and thread milling in a single operation.

Application: For **UNC unified coarse threads** ASME-B1.1.

Note: Form HB and HE supplied at the same price as HA.
Form **HB**: order with **No. 139723 + 129100 HB**
Form **HE**: order with **No. 139723 + 129100 HE**



13 9723

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 50 HRC	< 55 HRC	TOOLOX® 33 HRC	TOOLOX® 44 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	CuZn	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	M	M	S	K	N						
13 9723	220	220	180	140	130	120	90	80	45		85	50	82	75	50	120	200	●		●	●		●

UNC	11D 13 9723 GARANT Master TM plain shank thread mill with countersink 2×D TiAlN	Threads per inch	d_1 mm	l_1 mm	L_s mm	L_{tot} mm	mm	maximum countersink Ø d_3 mm	Programming value for countersink l_1 mm	No. of teeth Z	< 750 N f_z
10-24	XXX	24	3.55	10.02	36	58	6	5.5	10.99	4	0.03
1/4-20	XXX	20	4.7	13.29	36	68	8	6.85	14.36	4	0.05
5/16-18	XXX	18	6.1	16.18	40	75	10	8.5	17.38	4	0.06
3/8-16	XXX	16	7.5	19.8	45	82	12	10.1	21.1	4	0.07
7/16-14	XXX	14	8.8	22.61	45	92	12	11.6	24.01	6	0.08
1/2-13	XXX	13	10.3	26.32	45	94	14	13.2	27.77	6	0.09
9/16-12	XXX	12	11.6	30.63	48	106	16	14.8	32.23	6	0.1
5/8-11	XXX	11	13	33.41	48	108	18	16.4	35.11	6	0.11
3/4-10	XXX	10	15.9	39.29	50	120	20	19.6	41.14	6	0.13

UNF | UNF-LH | 60° | Solid carbide | h6 DIN 6535 HA | ≤2×D | 4 | 6

GARANT Master TM solid carbide plain shank thread mills

Solid carbide thread milling cutters **with irregular cutting edge spacing and an increased number of cutting edges**. Due to the **irregular cutting edge spacing** they achieve **very smooth running** and **long tool life**.
Newly developed universal geometry and **high-performance coating** for use across a wide spectrum of materials.

- **Significantly reduced vibration** due to **irregular cutting edge spacing**
- **Corrected thread profile** for avoidance of profile distortions

Application: For **UNF unified fine threads** ASME-B1.1.

Note: Form HB and HE supplied at the same price as HA.
Form **HB**: order with **No. 139727 + 129100 HB**
Form **HE**: order with **No. 139727 + 129100 HE**

13 9727

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 50 HRC	< 55 HRC	TOOLOX 33 HRC	TOOLOX 44 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	CuZn	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	M	M	S	K	N						
13 9727	220	220	180	140	130	120	90	80	45		85	50	82	75	50	120	200	●		●	●		●

UNF	11D 13 9727 GARANT Master TM plain shank thread mill 2×D TiAlN	Threads per inch	d_1 mm	l_1 mm	L_s mm	L_{tot} mm	mm	No. of teeth Z	< 750 N f_z
10-32	XXX	32	3.81	9.9	36	58	6	4	0.04
1/4-28	XXX	28	5.1	13.12	36	64	6	4	0.05
5/16-24	XXX	24	5.95	16.36	36	64	6	4	0.07
3/8-24	XXX	24	7.95	19.54	36	68	8	4	0.08
7/16-20	XXX	20	7.95	23.44	36	70	8	6	0.09
1/2-20	XXX	20	9.95	25.98	40	82	10	6	0.1
9/16-18	XXX	18	11.95	28.87	45	92	12	6	0.1
5/8-18	XXX	18	11.95	33.09	45	92	12	6	0.11
3/4-16	XXX	16	13.95	38.83	45	102	14	6	0.13
7/8-14	XXX	14	15.95	46.17	48	110	16	6	0.14
1-12	XXX	12	19.95	51.77	50	120	20	6	0.15

UNF | UNF-LH | 60° | Solid carbide | h6 DIN 6535 HA | ≤2×D | 90° | 4 | 6

GARANT Master TM solid carbide plain shank thread mills with countersink

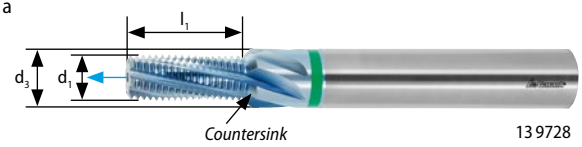
Solid carbide thread milling cutters **with irregular cutting edge spacing and an increased number of cutting edges**. Due to the **irregular cutting edge spacing** they achieve **very smooth running** and **long tool life**.
Newly developed universal geometry and **high-performance coating** for use across a wide spectrum of materials.

- **Significantly reduced vibration** due to **irregular cutting edge spacing**
- **Corrected thread profile** for avoidance of profile distortions

Advantage: Incorporating a countersink profile for a 90° countersink and thread milling in a single operation.

Application: For **UNF unified fine threads** ASME-B1.1.

Note: Form HB and HE supplied at the same price as HA.
Form **HB**: order with **No. 139728 + 129100 HB**
Form **HE**: order with **No. 139728 + 129100 HE**



13 9728

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 50 HRC	< 55 HRC	TOOLOX 33 HRC	TOOLOX 44 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	CuZn	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	M	M	S	K	N						
13 9728	220	220	180	140	130	120	90	80	45		85	50	82	75	50	120	200	●		●	●		●

UNF	11D 13 9728 GARANT Master TM plain shank thread mill with countersink 2×D TiAlN	Threads per inch	d_1 mm	l_1 mm	L_s mm	L_{tot} mm	mm	maximum countersink Ø d_3 mm	Programming value for countersink l_1 mm	No. of teeth Z	< 750 N f_z
10-32	XXX	32	3.81	9.1	36	58	6	5.5	10.74	4	0.04
1/4-28	XXX	28	5.1	13.12	36	68	8	6.85	14	4	0.05
5/16-24	XXX	24	6.5	16.36	40	75	10	8.5	17.36	4	0.07
3/8-24	XXX	24	8	19.54	45	82	12	10.1	20.59	4	0.08
7/16-20	XXX	20	9.3	23.45	45	92	12	11.6	24.6	6	0.09
1/2-20	XXX	20	10.9	25.99	45	94	14	13.2	27.14	6	0.1
9/16-18	XXX	18	12.3	27.88	48	106	16	14.8	30.13	6	0.1
5/8-18	XXX	18	13.9	33.11	48	108	18	16.4	34.36	6	0.11
3/4-16	XXX	16	16.8	38.85	50	120	20	19.6	40.25	6	0.13

NPT | 60° | Solid carbide | ANSI B1.20.1 | 1:16 | h6 DIN 6535 HA | 4 | 6

GARANT Master TM solid carbide plain shank thread mills

Solid carbide thread milling cutters **with irregular cutting edge spacing and an increased number of cutting edges**.
Due to the **irregular cutting edge spacing** they achieve **very smooth running** and **long tool life**.
Newly developed universal geometry and **high-performance coating** for use across a wide spectrum of materials.

- **Significantly reduced vibration** due to **irregular cutting edge spacing**
- **Increased number of cutting edges**
- **New coating** for optimum **wear resistance**
- **Corrected thread profile** for avoidance of profile distortions

Application: **Tapered** pipe threads **(NPT)** to ANSI B1.20.1, for threads with sealants.

Note: Form HB and HE supplied at the same price as HA.
Form **HB**: order with **No. 139729 + 129100 HB**
Form **HE**: order with **No. 139729 + 129100 HE**

139729

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 50 HRC	< 55 HRC	TOOLOX 33 HRC	TOOLOX 44 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	CuZn	Uni
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	M	M	S	K	N	
139729	220	220	180	140	130	120	90	80	45		85	50	82	75	50	120	200	●

NPT	11D 13 9729 GARANT Master TM plain shank thread mill TiAlN	Threads per inch	d_1 mm	l_1 mm	L_s mm	L_{tot} mm	mm	No. of teeth Z	< 750 N f_z
1/16-27	XXX	27	5.39	8.93	36	58	6	4	0.08
1/8-27	XXX	27	7.39	8.93	36	68	8	6	0.09
1/4-18	XXX	18	9.11	13.39	40	75	10	6	0.1
3/8-18	XXX	18	11.11	13.38	45	82	12	6	0.11
1/2-14	XXX	14	12.88	17.2	45	94	14	6	0.13

GARANT MASTER TM THREAD MILLS IN PERFECTION

Thanks to their unequal spacing of cutting edges, the new GARANT Master TM solid carbide thread milling cutters set new standards for thread milling.

Green ring
- For general applications.

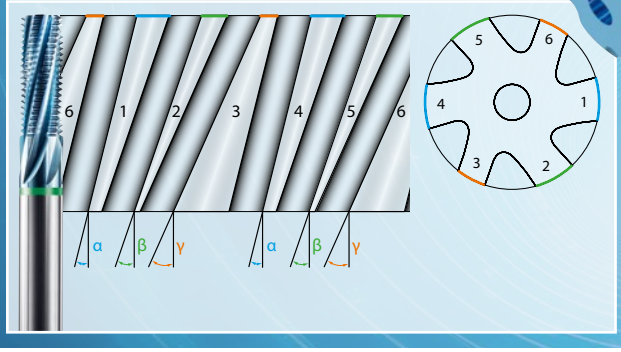
Innovative coating
- The latest coating technology for optimum protection against wear.
- High performance over a wide spectrum of materials.

Corrected thread profile
- Avoidance of profile distortion.
- Threads true to gauge and true to standard.

Optimised solid carbide substrate
- Improved bending strength.
- High tool strength.

Unequal spacing
- Significant reduction in vibration.
- Very smooth cutting action.
- Reduction in the cutting forces avoids tool displacement.

Increased number of cutting edges
- More efficiency due to increased contour feed rate.

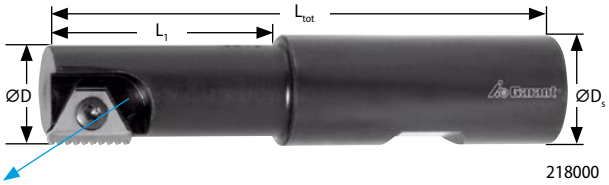


Your advantages at a glance:
- Long tool life due to optimum cutting characteristics.
- Shorter machining times due to more cutting edges.
- Optimum protection against wear due to new high-performance coating.
- High surface quality of the thread.
- Precise threads due to profile correction.
- Reduction in the variety of tools required, thanks to good general-purpose capabilities.

Indexable thread mills

Application:

- For parallel **internal** and **external threads;** other inserts and taper thread tools available on request.
- For threads in **through holes** and **blind holes.**
- For universal use cutting **left-hand and right-hand threads.**
- No chip clearance problems, since only short chips are produced.
- Low cutting pressure.



218000

Effective ∅ D / Overhang L_1 mm	21R 21 8000 Indexable thread mill Weldon shank	Insert size	L_{tot} mm	∅ D_s mm	Clamping screw
11,5/12	XXX	11	70	12	219923
11,5/20	XXX	11	85	20	219923
17/22	XXX	16	90	16	272530
20/43	XXX	16	95	20	272530
22/25	XXX	16	125	25	272530
30/52	XXX	27	110	25	219925
30/92	XXX	27	150	25	219925
37/58	XXX	27	120	32	219925
37/98	XXX	27	160	32	219925

Thread milling inserts for thread mill No. 218000

Sturdy inserts. **Two usable edges.**

- Wide range of applications thanks to universal chip breaker geometry.
- High repetition accuracy.

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	GG(G)	CuZn	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	K	N						
21 8005–21 8024	140	**120**	**80**	**120**	**110**	**100**	**80**	60						80	70	70	**120**	●		●			

M | MF | MF-LH | M-LH | 60°

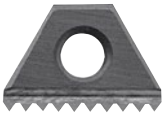
Application:

21 8005 Size 2 – **For metric internal coarse threads** to DIN / ISO (DIN 13) **M14, M16.**
21 8015 – **For metric external threads** to DIN / ISO (DIN 13) tolerance class 6g.
21 8005–8009 – **For metric internal threads** to DIN / ISO (DIN 13) tolerance class 6H.

Pitch mm			0,5	1	1,25	1,5	1,75	2	2,5	3	3,5	4	Insert size	f_z in steel < 1100 N/mm² mm	f_z in INOX < 900 N/mm² mm
21D 21 8005	Thread milling insert **for internal threads 60°**	HB7720	XXX	XXX	–	XXX	–	XXX	–	–	–	–	11	0.1	0.05
21D 21 8007		HB7720	–	XXX	XXX	XXX	XXX	XXX	–	–	–	–	16	0.1	0.05
21D 21 8009		HB7720	–	–	–	XXX	–	XXX	XXX	XXX	XXX	XXX	27	0.1	0.05
21D 21 8015	Thread milling insert **for external threads 60°**	HB7720	–	XXX	XXX	XXX	–	XXX	–	–	–	–	16	0.1	0.05

BSP | BSP-LH | BSW | BSW-LH | G | G-LH | 55°

Application: **For internal and external threads 55°** to standard BS 84: 1956, DIN 259, ISO 228/1:1982. Tolerance medium, class A.

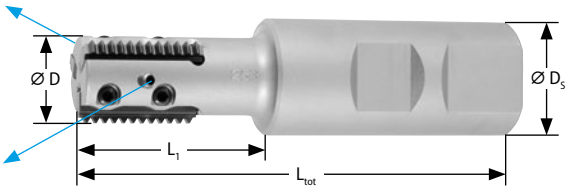


Threads per inch			11	14	19	Insert size	f_z in steel < 1100 N/mm² mm	f_z in INOX < 900 N/mm² mm
21D 21 8020	Thread milling insert **for internal and external threads 55°**	HB7720	–	XXX	XXX	11	0.1	0.05
21D 21 8022		HB7720	XXX	XXX	–	16	0.1	0.05
21D 21 8024		HB7720	XXX	–	–	27	0.1	0.05

Garant Indexable thread mills HPC

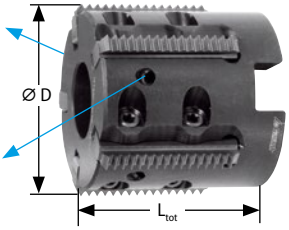
HPC thread milling cutters for **reduced machining times.**

Note:	Thread mill No. 218050 sizes 17/26 and 17/36 suitable for pitches up to and including 2.5 mm. Thread mill No. 218050 sizes 30/65 suitable for pitches up to < 5.



21 8050

Effective Ø D / Overhang L_1	21R **21 8050** High performance indexable thread mill **Weldon shank**	Insert size	Number of cutting edges Z	L_{tot}	Ø D_s	Clamping screw	Fixing screw
mm				mm	mm		
10/20	XXX	19	1	68	12	–	219859
11,7/25,5	XXX	19	1	73.5	12	–	219859
13,6/26	XXX	24	1	82	20	–	219926
15,1/30	XXX	24	1	85	20	–	219926
16/28	XXX	24	2	83	20	–	219926
17/26	XXX	25	2	85	25	–	219926
17/36	XXX	25	2	95	25	–	219926
19/44	XXX	25	2	104	25	–	219926
20,5/37	XXX	25	3	96	25	–	219926
22/43	XXX	25	3	102	25	–	219926
30/55	XXX	25	5	115	25	–	219926
24,5/43	XXX	41	2	104	25	219928	219927
30/65	XXX	41	3	128.5	32	219928	219927
36/65	XXX	41	4	128	32	219928	219927



21 8054

Effective Ø D	21R **21 8054** High performance indexable thread milling head **with bore**	Insert size	Number of cutting edges Z	L_{tot}	Mounting bore Ø H7	Fixing screw
mm				mm	mm	
36	XXX	25	5	33.5	16	219926

TOOL **Scout**

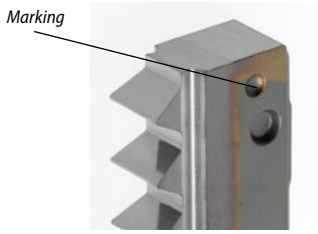
- Quick application-related tool selection
- Direct ordering in the eShop
- Tool selection not restricted to specific standards or manufacturers
- Cutting data - direct selection
- Tool information for reliable engineering

You can find optimum cutting data, machining strategy and NC programs for your machine programming in the ThreadScout.

Garant Milling inserts for HPC indexable thread mills No. 218050 / 218054

Sturdy milling inserts for **high feed rates** and **high productivity.**

Note: Always fit the thread milling inserts with the marks matching, otherwise the thread will be distorted! (Sides have either a mark or no mark).
Feed f_z = HB 7720 in steel < 750 N/mm² = 0.25 mm / tooth.
Feed f_z = HB 7735 in INOX > 900 N/mm² = 0.15 mm / tooth.



Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	CuZn	Graphite GRP CRP	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	M	M	S	K	N	N						
HB 7720 -	140	**120**	**80**	**120**	**110**	**100**	**80**	**60**				80	70	**40**	70	**120**	**120**	●		●			
HB 7735 -				120	110	100	**80**	**60**	25	20		**80**	**70**		**70**	120			○	●	●	○	○

M | MF | MF-LH | M-LH | 60°

21 8055–8058 – Single-edged
21 8060–8074 – Double-edged

Application:
21 8055–8064 – **For metric internal threads 60°** to DIN / ISO R 262 (DIN 13) tolerance class 6H.
21 8070–8074 – **For metric external threads 60°** to DIN / ISO R 262 (DIN 13) tolerance class 6g.

21 8055_2

21 8061_2

21 8063_4

Pitch mm			0,5	0,75	1	1,25	1,5	1,75	2	2,5	3	3,5	4	4,5	5	5,5	6		Insert size mm
21D 21 8055	Milling insert **for internal threads 60°**	HB7720	XXX	XXX	XXX	XXX	XXX	XXX	XXX	–	–	–	–	–	–	–	–	**2**	19
21D 21 8056		HB7735	XXX	XXX	XXX	XXX	XXX	XXX	XXX	–	–	–	–	–	–	–	–	**2**	19
21D 21 8057		HB7720	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	–	–	–	–	–	–	–	**2**	24
21D 21 8058		HB7735	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	–	–	–	–	–	–	–	**2**	24
21D 21 8060		HB7720	–	–	XXX	–	XXX	–	XXX	XXX	XXX	–	–	–	–	–	–	**2**	25
21D 21 8061		HB7735	–	–	XXX	–	XXX	–	XXX	XXX	XXX	–	–	–	–	–	–	**2**	25
21D 21 8063		HB7720	–	–	–	–	–	–	–	–	XXX	XXX	XXX	XXX	XXX	XXX	XXX	**2**	41
21D 21 8064		HB7735	–	–	–	–	–	–	–	–	XXX	XXX	XXX	XXX	XXX	XXX	XXX	**2**	41
21D 21 8070	Milling insert **for external threads 60°**	HB7720	–	–	XXX	–	XXX	–	XXX	XXX	XXX	–	–	–	–	–	–	**2**	25
21D 21 8071		HB7735	–	–	XXX	–	XXX	–	XXX	XXX	XXX	–	–	–	–	–	–	**2**	25
21D 21 8073		HB7720	–	–	–	–	–	–	–	–	XXX	XXX	XXX	XXX	XXX	XXX	XXX	**2**	41
21D 21 8074		HB7735	–	–	–	–	–	–	–	–	XXX	XXX	XXX	XXX	XXX	XXX	XXX	**2**	41

BSP | BSP-LH | BSW | BSW-LH | G | G-LH | 55°

21 8077/8078 – Single-edged.
21 8080/8081 – Double-edged.

Application: **For internal and external threads 55°** to standard BS 84: 1956, DIN 259, ISO 228/1: 1982. Tolerance class Medium Class A.

21 8080

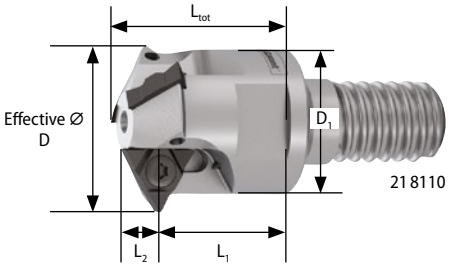
Threads per inch			11	14	19		Insert size mm
21D 21 8077	Milling insert **for internal and external threads 55°**	HB7720	–	XXX	XXX	**2**	24
21D 21 8078		HB7735	–	XXX	XXX	**2**	24
21D 21 8080		HB7720	XXX	XXX	–	**2**	25
21D 21 8081		HB7735	XXX	XXX	–	**2**	25

L R

Garant Indexable thread mill for deep holes

Application:

- For large and deep threads.
- For parallel internal threads; other inserts and carriers available on request.
- For threads in through holes and blind holes.
- For universal use on left-hand and right-hand threads.
- Low cutting pressure.



Ø D	21R 21 8110 Thread milling head Weldon shank	Insert size	Number of cutting edges Z	Mounting thread	Effective Ø D	Ø D_1	L_{tot}	L_1	L_2	Insert screw
mm					mm	mm	mm	mm	mm	
15	XXX	11	1	M6	14.75	10.6	20.5	15	5.2	272520 (TX8; 1.02 Nm)
17	XXX	11	1	M8	16.75	13	22.2	17	5.2	272520 (TX8; 1.02 Nm)
21	XXX	11	2	M8	20.75	14.1	19.2	14	5.2	272520 (TX8; 1.02 Nm)
23	XXX	11	2	M10	23.3	18	19.2	14	5.2	272520 (TX8; 1.02 Nm)
26	XXX	11	3	M12	26.6	21	25.2	20	5.2	272520 (TX8; 1.02 Nm)
31	XXX	11	4	M12	31	25	28.2	23	5.2	272520 (TX8; 1.02 Nm)
36	XXX	16	3	M16	36.5	29	32.95	25	7.95	272500 (TX10; 1.58 Nm)
42	XXX	16	4	M16	42	32	33.95	26	7.95	272530 (TX10; 1.7 Nm)

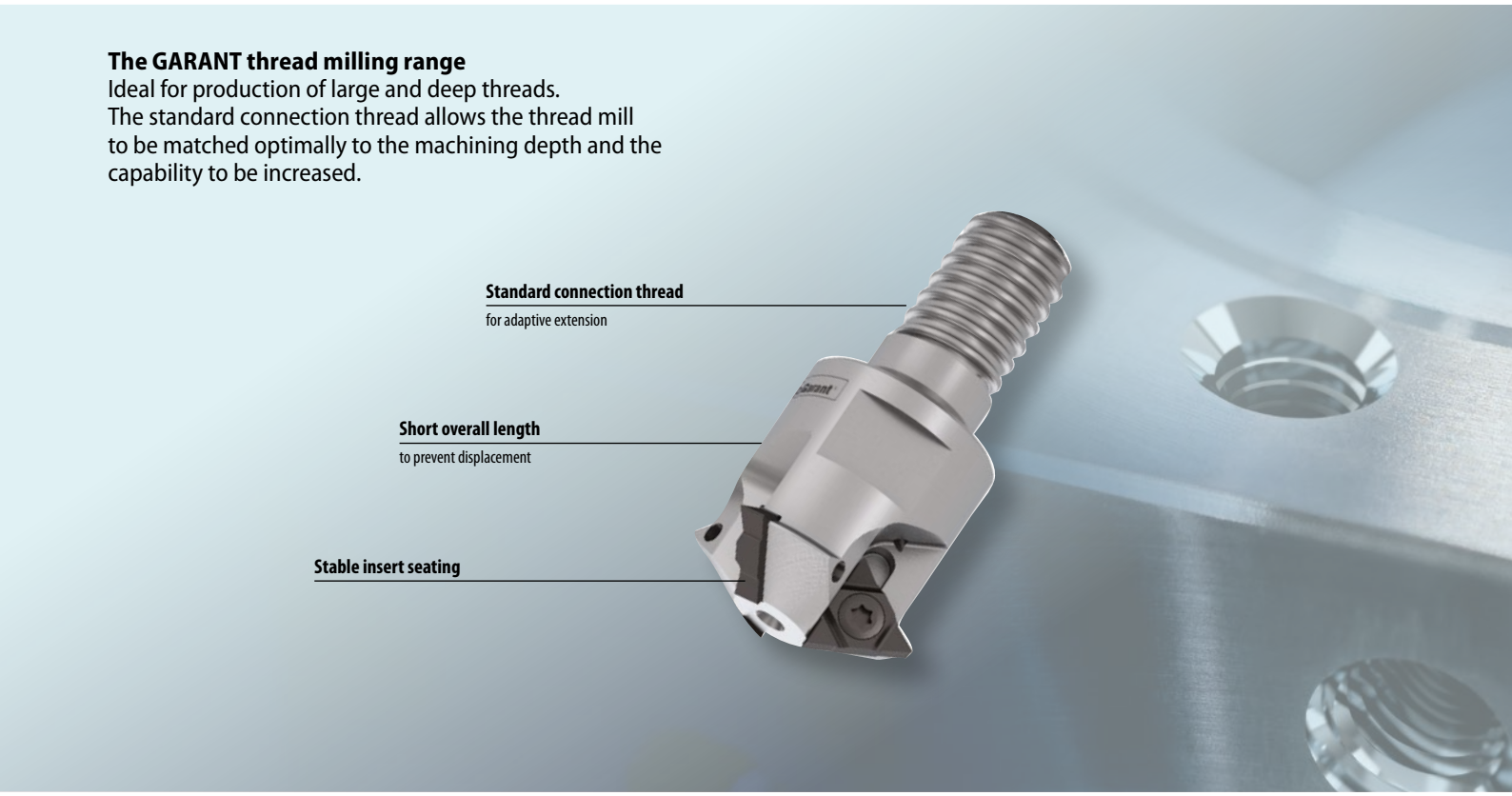
Garant Milling head and insert overview

Select the right milling head and insert for the thread application area.

Toolholders	D	60° internal thread 21 8122 / 21 8124		55° internal and external threads 21 8131 / 21 8133			
		ISO coarse thread	ISO fine thread	UNC	UN/UNF/UNEF/UNS	BSP(G)	Partial profile 55°
21 8210_15	14.75	M18×2.5; M24×3.0	M16×0.5; M16×0.75; M16×1.0; M17×1.25; M17×1.5; M17×2.0	3/4–10	5/8–32UN; 5/8–28UN; 5/8–27UNS; 11/16–24UN; 11/16–20UN; 11/16–16UN; 3/4–14UNS; 3/4–12UN	3/8–19; 1/2–14; 1–11	11/16–14; 3/4–12; 7/8–11; 3/4–10; 7/8–9; 1–8; 1 1/8–7
21 8110_17	16.75	M20×2.5; M24×3.0	M18×0.5; M18×0.75; M18×1.0; M19×1.25; M19×1.5; M19×2.0	–	3/4–32UN; 3/4–28UN; 7/8–27UN; 3/4–24UN; 34–20UN; 3/4–16UNF; 3/4–14UNS; 13/16–12UN; 7/8–10UN	1/2–14; 1–11	13/16–12; 7/8–11; 1–10; 7/8–9; 1–8; 1 1/8–7
21 8110_21	20.65	M24×2.5; M30×3.5	M22×0.5; M22×0.75; M22×1.0; M23×1.5; M23×2.0	1–8; 1 1/8–7; 1 3/8–6	7/8–32UN; 7/8–28UN; 7/8–27UNS; 7/8–24UNS; 7/8–20UNEF; 1–18UNS; 15/16–16UN; 1–14UNS; 15/16–12UN; 1 –10UNS	3/4–14; 1–11	1–26; 1–20; 1–16; 1–12; 1–10; 1 1/8–9; 1–8; 1 1/8–7
21 8110_23	22.65	M27×3.0; M30×3.5; M36×4.0	M24×0.5; M24×0.75; M25×1.0; M25×1.25; M26×1.5; M26×2.0; M27×2.5	1 1/8–7	1–32UN; 1–28UN; 1–27UNS; 1–24UNS; 1–20UNEF; 1–18UNS; 1–16UN; 1–14UNS; 1–12UNF; 1 1/8–10UNS; 1 1/8-8UN	3/4–14; 1–11	1–26; 1–20; 1–16; 1 1/16–12; 1 1/8–9; 1 1/8–7
21 8110_26	26.60	M33×2.5; M36×4.0	M28×0.5; M28×0.75; M28×1.0; M28×1.25; M29×1.5; M29×2.0; M30×2.5; M30×3.0	1 1/4–7; 1 3/8–6	1 1/8–28UN; 1 1/8–24UNS; 1 1/8–18UNEF; 1 1/8–16UN; 1 1/4–14UNS; 1 3/16–12UN; 1 1/4–10UNS; 1 3/16–8UN	7/8–14; 1–11	1 1/8–26; 1 1/8–20; 1 3/8–16; 1 3/8–12; 1 3/8–8; 1 1/4–7
21 8110_31	31.0	M36×4.0	M32×0.5; M32×0.75; M33×1.0; M33×1.25; M33×1.5; M34×2.0; M34×2.5; M35×3.0; M36×3.5	1 1/2–6	1 5/16–28UN; 1 3/8–24UNS; 1 5/16–20UN; 1 5/16–18UNEF; 1 5/16–16UN; 1 3/8–14UNS; 1 3/8–12UNF; 1 3/8–10UNS; 1 3/8–8UN	11/8–11	1 3/8–26; 1 3/8–20; 1 3/8–16; 1 3/8–12; 1–10; 1 7/16–8
21 8110_36	36.5	M42×2.5; M48×5.0; M56×5.5; M64×6.0	M39×1.5; M39×2.0; M40×2.5; M41×3.0; M42×3.5; M42×4.0	1 3/4–5; 2–4,5; 2 1/4–4	1 9/16–16UN; 1 5/8–14UNS; 1 9/16–12UN; 1 5/8–10UNS; 1 5/8–8UN; 1 5/8–6UN	1 1/4–11	1 5/8–16; 1 5/8–12; 1 5/8–8; 1 7/8–6; 1 3/4–5
21 8110_42	42.0	M48×5.0; M56×5.5; M64×6.0	M45×1.5; M45×2.0; M46×2.5; M48×3.5; M48×4.0	2–4.5; 2 1/2–4	1 3/4–16UN; 1 3/4–14UNS; 1 13/16–12UN; 1 13/16–8UN; 1 51/16–6UN	1 1/2–11	1 7/8–16; 1 7/8–12; 1 7/8–8; 2 1/4–6; 2–4.5

GARANT Master Tap INOX

The GARANT thread milling range
Ideal for production of large and deep threads.
The standard connection thread allows the thread mill to be matched optimally to the machining depth and the capability to be increased.

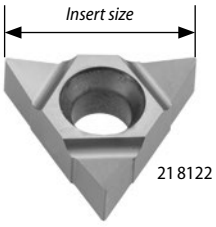


Thread milling inserts for thread mills with connection thread No. 218110

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	CuZn	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	M	M	S	K	N						
21 8122–21 8133	140	**120**	**80**	**120**	**110**	**100**	**80**	**60**					80	70	**40**	70	**120**	●		●			

60°

21 8122 – Insert size 11.
21 8124 – Insert size 16.
Application: For metric internal threads with 60° flank to DIN / ISO R 262 (DIN 13).



Pitch		mm	0,5-1,5	1,5-2,0	2,5-3,5	2,5-4,0	4,0-6,0	Insert size mm	f_z in steel < 1100 N/mm² mm	f_z in INOX < 900 N/mm² mm
21D **21 8122**	Thread milling insert **for internal threads 60°**	**HB7720**	XXX	XXX	–	XXX	–	11	0.1	0.03
21D **21 8124**		**HB7720**	–	XXX	XXX	–	XXX	16	0.1	0.03

55°

21 8131 – Insert size 11.
21 8133 – Insert size 16.
Application: For internal and external threads with 55° flank to standard BS 84: 1956, DIN 259, ISO 228/1: 1982.

Threads per inch			48-16	16-12	11-7	6-4	Insert size mm	f_z in steel < 1100 N/mm² mm	f_z in INOX < 900 N/mm² mm
21D **21 8131**	Thread milling insert	**HB7720**	XXX	XXX	XXX	–	11	0.05	0.03
21D **21 8133**		**HB7720**	–	XXX	XXX	XXX	16	0.05	0.03

M | 60° | HSS | EN 22568

Die

Closed, pre-slit form.
≥ M3 with tapered lead chamfer on both sides for easy start to the threading action and clean swarf evacuation in the direction of cutting. **1¾ turns lead chamfer.**
14 0300 Size M1–M1,4 – Tolerance zone 6h.
14 0350 – Tolerance zone 6e = **with undersize approx. 0.03 – 0.04 mm.**
For tolerance class "medium", when studs are provided with a **galvanic protection coating.**

DIN 13 6h
≤ M 1.4
DIN 13 6g
≤ M 1.6

14 0300

Pre-slit: If different thread tolerances are required, the die can be split here.

DIN 13 6e

14 0350

DIN 13 6g

14 0330

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	Graphite GRP CRP	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	N						
14 0300–14 0350		○		●	●														●			○	

M	11K 14 0300 Garant Die 6g	11K 14 0350 Garant Die 6e	12K 14 0330 HOLEX Die 6g	Pitch mm	External ∅ mm	Height mm
M1	XXX	–	–	0.25	16	5
M1,2	XXX	–	–	0.25	16	5
M1,4	XXX	–	–	0.3	16	5
M1,6	XXX	–	–	0.35	16	5
M1,7	XXX	–	–	0.35	16	5
M2	XXX	–	–	0.4	16	5
M3	XXX	XXX	XXX	0.5	20	5
M3,5	XXX	–	–	0.6	20	5
M4	XXX	XXX	XXX	0.7	20	5
M5	XXX	XXX	XXX	0.8	20	7
M6	XXX	XXX	XXX	1	20	7
M7	XXX	–	–	1	25	9

M	11K 14 0300 Garant Die 6g	11K 14 0350 Garant Die 6e	12K 14 0330 HOLEX Die 6g	Pitch mm	External ∅ mm	Height mm
M8	XXX	XXX	XXX	1.25	25	9
M9	XXX	–	–	1.25	25	9
M10	XXX	XXX	XXX	1.5	30	11
M12	XXX	XXX	XXX	1.75	38	14
M14	XXX	–	XXX	2	38	14
M16	XXX	–	XXX	2	45	18
M18	XXX	–	XXX	2.5	45	18
M20	XXX	–	XXX	2.5	45	18
M22	XXX	–	XXX	2.5	55	22
M24	XXX	–	XXX	3	55	22
M27	XXX	–	XXX	3	65	25
M30	XXX	–	XXX	3.5	65	25

M | 60° | HSS E | EN 22568 | DIN 13 6g

Die for stainless and high-tensile steel

Closed, pre-slit form.
≥ M3 with tapered lead chamfer on both sides for easy start to the threading action and clean swarf evacuation in the direction of cutting.
2 turns lead chamfer. Lapped and **nitrided,** rake approx. 15°.
14 0400 Size M2,3; M2,6 – with old DIN profile.

14 0400

14 0460

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	Graphite GRP CRP	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	N						
14 0400/0460				●	●	●	●	○						●	○			○	●			○	

M	11K 14 0400 Garant Die	12K 14 0460 HOLEX Die	Pitch mm	External ∅ mm	Height mm
M2	XXX	–	0.4	16	5
M2,2	XXX	–	0.45	16	5
M2,3	XXX	–	0.4	16	5
M2,5	XXX	–	0.45	16	5
M2,6	XXX	–	0.45	16	5
M3	XXX	XXX	0.5	20	5
M3,5	XXX	XXX	0.6	20	5
M4	XXX	XXX	0.7	20	5
M5	XXX	XXX	0.8	20	7
M6	XXX	XXX	1	20	7

M	11K 14 0400 Garant Die	12K 14 0460 HOLEX Die	Pitch mm	External ∅ mm	Height mm
M7	XXX	XXX	1	25	9
M8	XXX	XXX	1.25	25	9
M10	XXX	XXX	1.5	30	11
M12	XXX	XXX	1.75	38	14
M14	XXX	XXX	2	38	14
M16	XXX	XXX	2	45	18
M20	XXX	XXX	2.5	45	18
M24	XXX	XXX	3	55	22
M27	XXX	XXX	3	65	25
M30	XXX	XXX	3.5	65	25

M-LH | 60° | HSS | EN 22568 | DIN 13 6g

Garant Die, left-hand thread

Closed, pre-slit form.
1 3/4 turns lead chamfer.

Size M3–M24 – **with spiral point on both sides** for easy start to the cutting action and clean chip evacuation in the direction of cutting.

14 0620

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	Graphite GRP CRP	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	N						
14 0620		○		●	●														●			○	

M-LH	11K	14 0620 Die Left-hand thread	Pitch mm	External ∅ mm	Height mm
M2		(XXX)	0.4	16	5
M2,5		(XXX)	0.45	16	5
M3		XXX	0.5	20	5
M4		XXX	0.7	20	5
M5		XXX	0.8	20	7
M6		XXX	1	20	7
M8		XXX	1.25	25	9

M-LH	11K	14 0620 Die Left-hand thread	Pitch mm	External ∅ mm	Height mm
M10		XXX	1.5	30	11
M12		XXX	1.75	38	14
M14		XXX	2	38	14
M16		XXX	2	45	18
M18		(XXX)	2.5	45	18
M20		XXX	2.5	45	18
M24		XXX	3	55	22

M | 60° | HSS | DIN 382 | DIN 13 6g

Garant Hexagon die

External hexagon for standard socket size. **Without** tapered spiral point.
1 3/4 turns lead chamfer.

Note: For re-cutting damaged threads or for cutting where access is difficult.

14 0920

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	CuZn	Graphite GRP CRP					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	N	N					
14 0920		○		●	●	●	○							○			○		●			○	

M	11K	14 0920 Die Hexagon	Pitch mm	Width across flats mm	Height mm
M3		XXX	0.5	18	5
M4		XXX	0.7	18	5
M5		XXX	0.8	18	7
M6		XXX	1	18	7
M8		XXX	1.25	21	9

M	11K	14 0920 Die Hexagon	Pitch mm	Width across flats mm	Height mm
M10		XXX	1.5	27	11
M12		XXX	1.75	36	14
M14		XXX	2	36	14
M16		XXX	2	41	18
M20		XXX	2.5	41	18

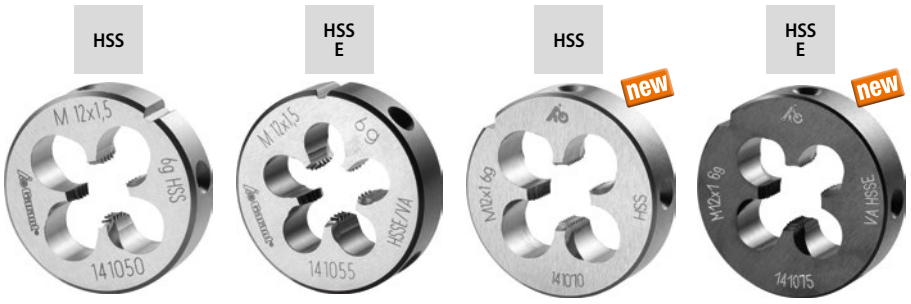
MF | 60° | EN 22568 | DIN 13 6g

Die

Closed, pre-slit form, **with tapered lead chamfer on both sides.**

14 1050/1070 – **1¾ turns lead chamfer.**

14 1055/1075 – **2 turns lead chamfer. Lapped** and **nitrided,** rake approx. 15°. **For stainless and high-tensile steels.**



14 1050 | 14 1055 | 14 1070 | 14 1075

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	Graphite GRP CRP	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	N						
14 1050/1070		○		●	●														●			○	
14 1055/1075				●	●	●	●	○						●	○				●			○	

M × pitch	11K 14 1050	11K 14 1055	12K 14 1070	12K 14 1075	External ∅	Height
	Garant		HOLEX			
	Die					
	HSS	HSS-E	HSS	HSS-E	mm	mm
4×0,5	XXX	–	–	–	20	5
5×0,5	XXX	–	–	–	20	5
6×0,5	XXX	–	–	–	20	5
6×0,75	XXX	XXX	–	XXX	20	7
7×0,75	XXX	–	–	–	25	9
8×0,5	XXX	–	–	–	25	9
8×0,75	XXX	XXX	–	XXX	25	9
8×1	XXX	XXX	XXX	XXX	25	9
9×1	XXX	–	–	–	25	9
10×0,75	XXX	–	–	–	30	11
10×1	XXX	XXX	XXX	XXX	30	11
10×1,25	XXX	XXX	–	XXX	30	11
11×1	XXX	–	–	–	30	11
12×1	XXX	XXX	XXX	XXX	38	10
12×1,25	XXX	XXX	–	XXX	38	10
12×1,5	XXX	XXX	XXX	XXX	38	10
14×1	XXX	XXX	–	XXX	38	10
14×1,25	XXX	–	–	–	38	10
14×1,5	XXX	XXX	XXX	XXX	38	10
15×1	XXX	–	–	–	38	10
16×1	XXX	XXX	–	XXX	45	14
16×1,5	XXX	XXX	XXX	XXX	45	14
18×1	XXX	–	–	–	45	14
18×1,5	XXX	XXX	XXX	XXX	45	14
20×1	XXX	–	–	–	45	14
20×1,5	XXX	XXX	XXX	XXX	45	14
22×1	XXX	–	–	–	55	16
22×1,5	XXX	–	XXX	–	55	16
24×1	XXX	–	–	–	55	16
24×1,5	XXX	–	XXX	–	55	16
24×2	XXX	–	–	–	55	16
25×1,5	XXX	–	–	–	55	16
26×1,5	XXX	–	–	–	55	16
27×1,5	XXX	–	–	–	65	18
27×2	XXX	–	–	–	65	18
28×1,5	XXX	–	–	–	65	18
30×1	(XXX)	–	–	–	65	18
30×1,5	XXX	–	–	–	65	18
30×2	XXX	–	–	–	65	18
32×1,5	XXX	–	–	–	65	18

BSW | 55° | HSS | EN 22568

Garant Die

Closed, pre-slit form; **with tapered lead chamfer on both sides** for easy start to the threading action and clean swarf evacuation in the direction of cutting. **1¾ turns lead chamfer.**

Application: **For Whitworth threads** to BSW standard BS84 in the tolerance field "medium".

14 1550

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	Graphite GRP CRP	Uni
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	N	
14 1550		○		●	●													

inch	11K 14 1550 Die	Threads per inch	Thread ∅ mm	External ∅ mm	Height mm
W1/8	XXX	40	3.18	20	5
W5/32	XXX	32	3.97	20	7
W3/16	XXX	24	4.76	20	7
W7/32	XXX	24	5.56	20	7
W1/4	XXX	20	6.35	20	7
W5/16	XXX	18	7.94	25	9
W3/8	XXX	16	9.53	30	11
W7/16	XXX	14	11.11	30	11
W1/2	XXX	12	12.7	38	14
W9/16	XXX	12	14.29	38	14
W5/8	XXX	11	15.88	45	18
W3/4	XXX	10	19.05	45	18
W7/8	XXX	9	22.23	55	22
W1	XXX	8	25.4	55	22

G | 55° | HSS

Garant Die

14 2050 – Closed, pre-slit form; **with tapered lead chamfer on both sides** for easy start to the threading action and clean swarf evacuation in the direction of cutting. **1¾ turns lead chamfer.**

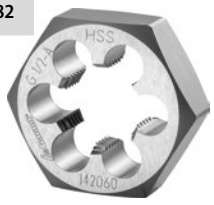
14 2060 – **Hexagon** die **without** tapered lead chamfer; for re-cutting.

Application: **For Whitworth parallel pipe threads** DIN ISO 228/1

EN 24231

14 2050

DIN 382



14 2060

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	CuZn	Graphite GRP CRP
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	N	N
14 2050		○		●	●													
14 2060		○		●	●	●	○							○			○	

inch	11K 14 2050 Die	11K 14 2060 Die	Threads per inch	Thread ∅ mm	External ∅ 14 2050 mm	Width across flats 14 2060 mm	Height mm
G1/8	XXX	XXX	28	9.73	30	27	11
G1/4	XXX	XXX	19	13.16	38	36	10
G3/8	XXX	XXX	19	16.66	45	41	14
G1/2	XXX	XXX	14	20.96	45	41	14
G3/4	XXX	XXX	14	26.44	55	50	16
G1	XXX	XXX	11	33.25	65	60	18
G1.1/4	–	XXX	11	41.91	–	70	20
G1.1/2	–	XXX	11	47.8	–	85	22
G2	–	XXX	11	59.61	–	100	22

UNC | 60° | HSS | EN 22568 | 2A

Garant Die UNC

Closed, pre-slit form; **with tapered lead chamfer on both sides** for easy start to the threading action and clean swarf evacuation in the direction of cutting. **1¾ turns lead chamfer.**

Application: **For UNC uniform coarse threads** ASME – B1.1.

14 2520

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	Graphite GRP CRP	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	N						
14 2520		○		●	●														●				○

UNC	11K 14 2520 Die	Threads per inch	Thread ∅ mm	External ∅ mm	Height mm
4-40	XXX	40	2.85	16	5
5-40	(XXX)	40	3.18	20	5
6-32	XXX	32	3.51	20	7
8-32	XXX	32	4.17	20	7
10-24	XXX	24	4.83	20	7
12-24	(XXX)	24	5.49	20	7
1/4-20	XXX	20	6.35	20	7
5/16-18	XXX	18	7.94	25	9
3/8-16	XXX	16	9.53	30	11
7/16-14	XXX	14	11.11	30	11
1/2-13	XXX	13	12.7	38	14
5/8-11	XXX	11	15.88	45	18
3/4-10	XXX	10	19.05	45	18
7/8-9	(XXX)	9	22.23	55	22
1-8	(XXX)	8	25.4	55	22

UNF | 60° | HSS | EN 22568 | 2A

Garant Die UNF

Closed, pre-slit form; **with tapered lead chamfer on both sides** for easy start to the threading action and clean swarf evacuation in the direction of cutting. **1¾ turns lead chamfer.**

Application: **For UNF uniform fine threads** ASME – B1.1.

14 2620

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	Graphite GRP CRP	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	N						
14 2620		○		●	●														●				○

UNF	11K 14 2620 Die	Threads per inch	Thread ∅ mm	External ∅ mm	Height mm
10-32	XXX	32	4.83	20	7
12-28	(XXX)	28	5.49	20	7
1/4-28	XXX	28	6.35	20	7
5/16-24	XXX	24	7.94	25	9
3/8-24	XXX	24	9.53	30	11
7/16-20	XXX	20	11.11	30	11
1/2-20	XXX	20	12.7	38	10
5/8-18	XXX	18	15.88	45	14
3/4-16	XXX	16	19.05	45	14
7/8-14	XXX	14	22.23	55	16
1-12	(XXX)	12	25.4	55	16

Die sets in a case

60° | EN 22568 | DIN 13 6g

HSS | HSS E

14 2700/2725 – Die set **HSS,** 7 pieces (M3–M12) in a case.
14 2710/2735 – Die set **HSS-E,** 7 pieces (M3–M12) in a case.

for metric threads			M3-12	Content:
11K 14 2700	Garant	Die set HSS	XXX	1 each die No. 140300 size M3; M4; M5; M6; M8; M10; M12.
11K 14 2710	Garant	Die set HSS-E	XXX	1 each die No. 140400 size M3; M4; M5; M6; M8; M10; M12.
12K 14 2725	HOLEX	Die set HSS	XXX	1 each die No. 140330 size M3; M4; M5; M6; M8; M10; M12.
12K 14 2735	HOLEX	Die set HSS-E	XXX	1 each die No. 140460 size M3; M4; M5; M6; M8; M10; M12.

14 2700

14 2725

Suitable for: Dies M3–M12

for metric threads			M3-12
11K 14 2740	Garant	Empty case for dies	XXX
12K 14 2745	HOLEX		XXX

Thread cutting set in a sheet metal case

M | 60°

14 5112–5312 – **Strong sheet metal case** with carrying handle and 2 offset catches.
Each tool is securely stored in its own holder and immediately ready to hand.
The taps are raised up vertically when the lid is opened.
For more detailed descriptions of the content see individual products.

14 5112_M3-12

14 5117_M3-12

for metric threads			M3-12	M3-20
11K 14 5112	Garant	Thread Set **with tap sets, 3 pieces**	XXX	XXX
12K 14 5117	HOLEX		XXX	XXX
11K 14 5312	Garant	Thread Set **with spiral point taps**	XXX	–
Content: 1 each tap set, 3 pieces, No. 130150 (14 5112)			Size M3; M4; M5; M6; M8; M10; M12	Size M3; M4; M5; M6; M8; M10; M12; M14; M16; M18; M20
1 each tap set, 3 pieces, No. 130200 (14 5117)			Size M3; M4; M5; M6; M8; M10; M12	Size M3; M4; M5; M6; M8; M10; M12; M14; M16; M18; M20
3 each spiral point tap No. 131450 (14 5312)			Size M3; M4; M5; M6; M8; M10; M12	–
1 each die No. 140300 (14 5112, 14 5312)			Size M3; M4; M5; M6; M8; M10; M12	Size M3; M4; M5; M6; M8; M10; M12; M14; M16; M18; M20
1 each die No. 140330 (14 5117)			Size M3; M4; M5; M6; M8; M10; M12	Size M3; M4; M5; M6; M8; M10; M12; M14; M16; M18; M20
1 each jobber drill No. 114150 (14 5112, 14 5312)			Size 2.5; 3.3; 4.2; 5; 6.8; 8.5; 10.2	–
1 each adjustable tap wrench No. 148410			Size 1; 2	Size 1.1/2; 3
1 each jobber drill No. 114030 (14 5117)			Size 2.5; 3.3; 4.2; 5; 6.8; 8.5; 10.2	–
1 each die stock No. 149310			Size 20×5; 20×7; 25×9; 30×11; 38×14	Size 20×5; 20×7; 25×9; 30×11; 38×14; 45×18
1 tap wrench with ratchet No. 148700			Size 85	Size 85; 110
1 thread gauge No. 477000			Size M/W	
1 screwdriver No. 664300			Size 3×60	

for metric threads			M3-12	M3-20
new 11K 14 5605	Garant	Sheet metal case empty for thread cutting set	XXX	XXX
new 12K 14 5610	HOLEX		XXX	XXX

Garant Fine thread cutting set – in a sheet metal case

14 5807 – **Sturdy sheet metal case** with carrying handle and 2 catches. Each tool is securely stored and protected in its own holder and is immediately ready to hand. For more detailed descriptions of the content see individual products.

MF 60°

for metric fine threads		MF3-20
1 PK 14 5807	Set of fine-pitch taps and dies in a metal case	XXX
Content: 1 set each hand tap No. 130470		Size 3×0.35; 4×0.5; 5×0.5; 6×0.75; 8×1; 10×1; 12×1.5; 14×1.5; 16×1.5; 18×1.5; 20×1.5;
1 each die No. 141050		Size 4×0.5; 5×0.5; 6×0.75; 8×1; 10×1; 12×1.5; 14×1.5; 16×1.5; 18×1.5; 20×1.5;
1 each adjustable tap wrench No. 148410		Size 1; 3
1 each die stock No. 149310		Size 20×7; 25×9; 30×11; 38×10; 45×14

for metric fine threads		MF3-20
new 1 PK 14 5815	Sheet metal box empty for sets of fine pitch taps and dies	XXX

14 5807

G 55°

Garant Pipe thread cutting set – in a case

Sturdy plastic case with carrying handle and 2 catches. Each tool is securely stored and protected in a foam insert and is immediately ready to hand. For more detailed descriptions of the content see individual products.

Application: For **Whitworth parallel pipe threads** DIN ISO 228/1

for parallel pipe threads		G1/8-1
1 PK 14 5905	Pipe thread cutting set in a plastic case	XXX
Content: 1 set each hand tap No. 130550		Size 5.5
1 each die No. 142050		Size 1/8; 1/4; 3/8; 1/2; 3/4; 1
1 each adjustable tap wrench No. 148410		Size 3; 5
1 each die stock No. 149310		Size 30×11; 38×10; 45×14; 55×16; 65×18
1 screwdriver No. 664120		Size 5.5

14 5905

UNC 60°

Garant UNC thread cutting set in a case

Sturdy plastic case with carrying handle and 2 catches. Each tool is securely stored and protected in a foam insert and is immediately ready to hand. For more detailed descriptions of the content see individual products.

Application: **For UNC unified coarse threads** ASME–B1.1.

for UNC unified coarse threads		UNC1/4-3/4
1 PK 14 5955	UNC thread cutting set in a plastic case	XXX
Content: 1 set each hand tap No. 130700		Size 1/4; 5/16; 3/8; 7/16; 1/2; 5/8; 3/4
1 each die No. 142520		Size 1/4; 5/16; 3/8; 7/16; 1/2; 5/8; 3/4
1 each adjustable tap wrench No. 148410		Size 1.1/2; 2; 4
1 each die stock No. 149310		Size 20×7; 25×9; 30×11; 38×14; 45×18
1 screwdriver No. 664120		Size 5.5

14 5955

UNF 60°

Garant UNF thread cutting set in a case

Sturdy plastic case with carrying handle and 2 catches. Each tool is securely stored and protected in a foam insert and is immediately ready to hand. For more detailed descriptions of the content see individual products.

Application: **For UNF unified fine threads** ASME–B1.1.

for UNF unified fine threads		UNF1/4-3/4
1 PK 14 5965	UNF thread cutting set in a plastic case	XXX
Content: 1 set each hand tap No. 130750		Size 1/4; 5/16; 3/8; 7/16; 1/2; 5/8; 3/4
1 each die No. 142620		Size 1/4; 5/16; 3/8; 7/16; 1/2; 5/8; 3/4
1 each adjustable tap wrench No. 148410		Size 1.1/2; 2; 4
1 each die stock No. 149310		Size 20×7; 25×9; 30×11; 38×10; 45×14
1 screwdriver No. 664120		Size 5.5

14 5965

Tap sets (some with tapping drills) in a metal case

When the case is opened, the tools raise up vertically and can easily be selected.

146260 – Consisting of spiral point taps M3; M4; M5; M6; M8; M10; M12, tapping drills size 2.5; 3.3; 4.2; 5; 6.8; 8.5; 10.2 and tap wrench size 1.1/2.

146350 – Consisting of spiral point taps M3; M4; M5; M6; M8; M10; M12, tapping drills size 2.5; 3.3; 4.2; 5; 6.8; 8.5; 10.2.

146050/6055 – Consisting of 3-piece hand tap sets M3; M4; M5; M6; M8; M10; M12.

146150/6170 – Consisting of 3-piece hand tap sets M3; M4; M5; M6; M8; M10; M12 and tapping drills size 2.5; 3.3; 4.2; 5; 6.8; 8.5; 10.2.

146435/6445/6735/6745 – Consisting of machine taps M3; M4; M5; M6; M8; M10; M12.

146450–6725/6750–6950 – Consisting of machine taps M3; M4; M5; M6; M8; M10; M12 and tapping drills size 2.5; 3.3; 4.2; 5; 6.8; 8.5; 10.2.

Hand tap sets, 3 pieces

M | 60° | DIN 352

146050 146055

for metric threads		M3-12	Content:
11K 146050	Garant	XXX	1 set each M3 – M12 hand taps 3 pieces No. 130150
12K 146055	HOLEX	XXX	1 set each M3 – M12 hand taps 3 pieces No. 130200

Hand taps

Hand tap sets, 3 pieces, with tapping drill

M | 60° | DIN 352

146150 146170

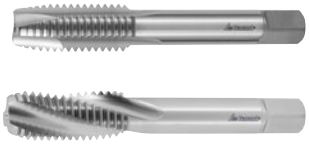
for metric threads		M3-12	Content:
11K 146150	Garant	XXX	1 pc. each 3-piece set of M3 – M12 hand taps No. 130150 and tapping drill No. 114150
12K 146170	HOLEX	XXX	1 pc. each 3-piece set of M3 – M12 hand taps No. 130200 and tapping drill No. 114030

Hand taps + tapping drills

Spiral point tap sets, short, with tapping drill

M | 60° | DIN 352

146260 146350



for metric threads		M3-12	Content:
11K 146260	Through hole taps, stub + tapping drills + tap wrench	XXX	1 pc. each spiral point tap M3 – M12 No. 131450, tapping drill No. 114150 and tap wrench No. 148410
11K 146350	Blind hole taps, stub + tapping drills	XXX	1 pc. each spiral point tap M3 – M12 No. 134650 and tapping drill No. 114150

Garant

Sets of spiral point taps

M | 60° | DIN 371 | DIN 376

146435 146445

for metric threads		M3-12	Content:
11I 146435	Garant GARANT Master Tap through hole machine taps	XXX	1 pc. each machine tap M3 – M12 No. 132721
12K 146445	HOLEX Through hole machine taps	XXX	1 pc. each machine tap M3 – M12 No. 132645

Through hole machine tap sets, with tapping drill

M | 60° | DIN 371 | DIN 376

146723

146725

for metric threads			M3-12	Content:
11K 14 6450	Garant	Through hole machine taps + tapping drills	XXX	1 pc. each machine tap M3 – M10 No. 131150, 1 machine tap M12 No. 131200 and tapping drill No. 114150
11K 14 6550	Garant	Through hole machine taps + tapping drills	XXX	1 pc. each machine tap with oil groove M3 – M12 No. 131850 and tapping drill No. 114150
11K 14 6650	Garant		XXX	1 pc. each machine tap M3 – M12 No. 132150 and tapping drill No. 114400
11K 14 6723	Garant	Through hole machine taps + tapping drills	XXX	1 pc. each machine tap M3 – M12 No. 132640 and tapping drill No. 114580
12K 14 6725	HOLEX		XXX	1 pc. each machine tap M3 – M12 No. 132645 and tapping drill No. 114405

Blind hole machine tap sets

M | 60° | DIN 371 | DIN 376

146735

146745

for metric threads			M3-12	Content:
11I 14 6735	Garant	GARANT Master Tap blind hole machine taps	XXX	1 pc. each machine tap M3 – M12 No. 135960
12K 14 6745	HOLEX	Blind hole machine taps	XXX	1 pc. each machine tap M3 – M12 No. 135855

Blind hole machine tap sets, with tapping drill

M | 60° | DIN 371 | DIN 376

146923

146925

for metric threads			M3-12	Content:
11K 14 6750	Garant		XXX	1 pc. each machine tap M3 – M12 No. 134851 and tapping drill No. 114150
11K 14 6850	Garant		XXX	1 pc. each machine tap M3 – M12 No. 134250 and tapping drill No. 114150
11K 14 6950	Garant	Blind hole machine taps + tapping drills	XXX	1 pc. each machine tap M3 – M12 No. 135450 and tapping drill No. 114400
11K 14 6923	Garant		XXX	1 pc. each machine tap M3 – M12 No. 135850 and tapping drill No. 114580
12K 14 6925	HOLEX		XXX	1 pc. each machine tap M3 – M12 No. 135855 and tapping drill No. 114405

Empty cases

Type			1	2	3	4	5
11K 14 6960	Garant	Empty case	XXX	XXX	XXX	XXX	XXX
12K 14 6961	HOLEX		XXX	XXX	–	XXX	XXX
for taps M3–M12			Sets, 3 pieces DIN 352	Sets, 3 pieces DIN 352	Spiral point DIN 352	Machine taps DIN 371/376	Machine taps DIN 371/376
for 1 each tapping drill			–	Size M3–M12	Size M3–M12	Size M3–M12	–
for 1 adjustable tap wrench 148400			–	–	No. 1.1/2	–	–

T-tap wrench with ratchet

With two-jaw chuck for clamping square shanks. Moveable T-handle with a groove at each end for engaging the retaining ball. Bracket chrome-plated. Ratchet is reversible and can also be locked. **All-steel construction** for high torque applications. Toolholder with precision concentricity and tight tolerances. Clamping jaws milled and induction hardened for high toughness and optimum surface hardness.

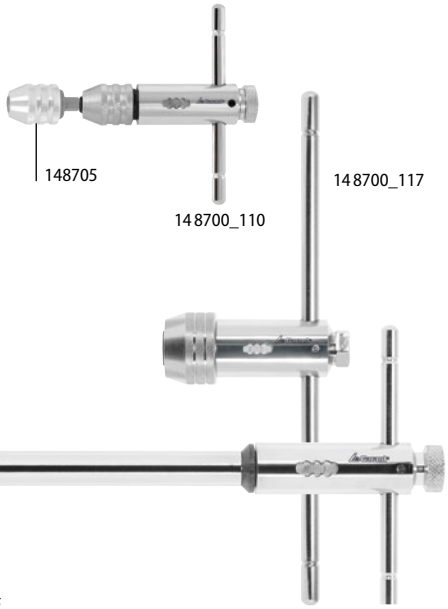
14 8700 Size 117 – **Heavy-duty version** for taps up to M20.
With head-side **hexagon** with 22 mm jaw width.

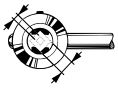
Size 110; 300 – Patented clamping jaw shape also allows precise and secure clamping of taps even with 1/4 inch hexagon shanks (e.g. No. 676307). Clamps on the complete hexagon face.

Application:

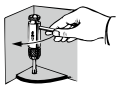
14 8700 – Suitable for tapping holes where access is difficult.
14 9000 – Suitable for tapping holes where access is difficult.

Note:	The square sizes of other tap and reamer sizes can be found in the tables in the respective Product Groups.





With 2 adjustable jaws. The specified dimensions relate to the smallest and largest diameters.



With ratchet and adjustable T-handle – particularly useful for tapping holes where access is difficult.

Overall length			mm	85	110	117	250	300
11K 14 8700	T-tap wrench with ratchet	**All-steel**		XXX	XXX	XXX	–	–
11K 14 9000	T-tap wrench with ratchet **long**	**All-steel**		–	–	–	XXX	XXX
Capacity ☐			mm	2.6 – 5.5	4.6 – 8	9 – 12.5	2.6 – 5.5	4.6 – 8
for hand taps DIN 352				M3 – M10	M4,5 – M12	M13 – M20	M3 – M10	M4.5 – M12
Spare jaws No. 148710 size				85	110	117	85	110

All-steel adapter, for clamping smaller sizes of taps (M3 – M10) in the GARANT tap wrench No. 148700, size 110.

Type			1
11K 14 8705	Adapter for toolholder	**All-steel**	XXX
Capacity ☐		mm	2.6 – 5.5
for hand taps DIN 352			M3 – M10
suitable for holder			148700_110

14 8705

Adjustable circular tap wrench

Adjustable to tool square drive by means of a knurled adjusting screw. Hardened clamping jaws.

Application: For gentle cutting with small taps M1 – M2.6.

14 8500

			External ∅ mm	Capacity square up to mm
12L 14 8500	Circular tap wrench	XXX	40	2.4

Pin vice

Serrated brass handle, nickel-plated with two interchangeable collets for different diameters. With square clamping nut.

12L 14 9150	Pin vice		XXX
Capacity ☐		mm	0 – 3
Overall length		mm	110

14 9150

Serrated brass handle, nickel-plated.

Size 0-3 – With two collets for different diameters.
Size 0-1; 1-2 – With one collet.

14 9160_0-1 / _1-2

Capacity ☐		mm	0-1	1-2	0-3
12L 14 9160	Pin vice		XXX	XXX	XXX
Capacity ☐		mm	0 – 1	1 – 2	0 – 3
Overall length		mm	74	74	105

14 9160_0-3

DIN 1814

Adjustable tap wrench

With hardened jaws and steel grips. For use in confined spaces one steel handle can be unscrewed.

14 8150 – Strengthened version. All dimensions **with high-quality forged steel body and all-steel handles.**

14 8200 – For **heavy** duties and **precision applications.** All dimensions with **high-quality forged steel base bodies** and integral fixed jaws. **Round vials** for straight application.

14 8410 – For **standard** use: Zinc die-cast body.

14 8200

14 8410

14 8150

Type	11K 14 8200 Garant	12L 14 8410 HOLEX	12L 14 8150	Capacity □	for hand taps DIN 352	for hand reamer ∅ DIN 206	Overall length	
	Tap wrench, adjustable						14 8200 14 8410	14 8150
	reinforced		reinforced	mm		mm	mm	mm
0	XXX	XXX	XXX	2 – 5	M1 – M8	2.5 – 6.5	125	130
1	XXX	XXX	XXX	2 – 6.3	M1 – M10	2.5 – 7.5	175	175
1.1/2	XXX	XXX	XXX	2 – 8	M1 – M12	2.5 – 9.5	175	200
2	XXX	XXX	XXX	3 – 9	M4 – M12	5 – 10	265	280
3	XXX	XXX	XXX	4.9 – 12	M5 – M20	6.5 – 15	370	385
4	XXX	XXX	XXX	5.5 – 16	M9 – M27	7 – 20	480	470
5	XXX	XXX	XXX	7 – 20	M12 – M33	9 – 26	700	700
6	XXX	–	XXX	9 – 24	M16 – M42	11 – 32	1000	900
7	XXX	–	XXX	14.5 – 36	M25 – M58	20 – 45	1258	1120

EN 22568

HOLEX Die stock, EN 22568

Steel handle can be unscrewed. With 5 screws to clamp the die. **Up to size 65×25** of die-cast zinc, **from size 75×20** of steel.

Application: For direct mounting of solid and adjustable dies to EN 22568.

14 9310

for die ∅ × height	12L 14 9310	Metric thread	Metric fine thread	UNC thread	UNF thread	Whitworth thread	Whitworth pipe thread	Overall length
	Die stock, EN 22568							
mm				inch	inch	inch	inch	mm
16×5	XXX	M1 – M2.6	M1×0.2 – M2.6×0.35	No.1 – No.4	No.0 – No.4	1/16 – 3/32	–	160
20×5	XXX	M3 – M4	M3×0.25 – M6×0.5	No.5	No.5 – No.6	1/8 – 5/32	–	175
20×7	XXX	M4.5 – M6	M5×0.75 – M6×0.75	No.6 – 1/4	No.8 – 1/4	3/16 – 1/4	–	175
25×9	XXX	M7 – M9	M7×0.5 – M9×1	5/16	5/16	5/16	–	210
25,4×9,5	XXX	M2 – M12	M4 – M10	No.3 – 7/16	No.3 – 7/16	5/16 – 1/8	G1/8	225
30×11	XXX	M10 – M11	M10×0.75 – M11×1	3/8 – 7/16	3/8 – 7/16	3/8 – 7/16	G1/8	260
38×10	XXX	–	M12×1 – M15×1	–	1/2 – 9/16	–	G1/4	310
38×14	XXX	M12 – M14	–	1/2 – 9/16	–	1/2 – 9/16	–	310
38,1×12,7	XXX	M8 – M20	M10 – M14	7/16 – 3/4	7/16 – 3/4	1.1/2	G1/16 – G1/4	315
45×14	XXX	–	M16×1 – M20×2	–	5/8 – 3/4	–	G3/8 – G1/2	440
45×18	XXX	M16 – M20	–	5/8 – 3/4	–	5/8 – 3/4	–	440
50,8×15,9	XXX	M18 – M27	M20 – M28	5/8 – 1	5/8 – 1	2	G3/8 – G1/2	560
55×16	XXX	–	M22×1 – M25×1.5	–	7/8 – 1	–	G5/8 – G3/4	495
55×22	XXX	M22 – M24	–	7/8 – 1	–	7/8 – 1	–	495
65×18	XXX	–	M27×1.5 – M36×2	–	1.1/8 – 1.3/8	–	G7/8 – G1	630
65×25	XXX	M27 – M36	M30×3 – M36×3	1.1/8 – 1.3/8	–	1.1/8 – 1.3/8	–	630
75×20	XXX	–	M38×1 – M42×2	–	1.1/2	–	G1 1/8 – G1 1/4	700
75×30	XXX	M39 – M42	M39×3 – M42×3	1.1/2	–	1.1/2 – 1.5/8	–	700
90×22	XXX	–	M45×1.5 – M52×2	–	–	–	G1 3/8 – G1 3/4	900
90×36	XXX	M45 – M52	M45×3 – M52×3	1.3/4 – 2	–	1.3/4 – 2	–	900
105×22	XXX	–	M55×2 – M65×2	–	–	–	G2 – G2 1/4	930

HOLEX Extensions for taps and hand reamers

DIN 377

Hardened and nickel-plated. Square drive and square socket the same size.

Application: For extending short taps (e.g. DIN 351 / 352 / 2181 / 5157), hand reamers and other tools with square shanks.

Note: Extensions for machine taps with shank, e.g. to DIN 371 / 374 / 376, can be found under **No. 338400.**

14 9400

Internal and external □ mm	12L 14 9400 Extension	for metric taps DIN 352	Ø D mm	Overall length mm
2,1	XXX	M1 – M2.6	6	60
2,4	XXX	–	6	70
2,7	XXX	M3	7	80
3	XXX	M3.5	7	90
3,4	XXX	M4	8	95
3,8	XXX	–	9	100
4,3	XXX	–	10	105
4,9	XXX	M4.5 – M8	11	110
5,5	XXX	M9 – M10	12	115
6,2	XXX	M11	14	120
7	XXX	M12	15	125

Internal and external □ mm	12L 14 9400 Extension	for metric taps DIN 352	Ø D mm	Overall length mm
8	XXX	–	17	125
9	XXX	M13 –M16	19	130
10	XXX	–	21	140
11	XXX	M18	23	150
12	XXX	M20	25	155
13	XXX	–	27	165
14,5	XXX	M22 – M24	29	175
16	XXX	M27	30	180
18	XXX	M30	33	200
20	XXX	M33	36	220

Set of holders for cutting internal and external threads on conventional lathes

High-quality **holders** for taps and dies for use on conventional lathes.

Size 2 – For internal threads **M3 – M16** and external threads **M3 – M14.**

Size 3 – For internal threads **M4 – M24** and external threads **M16 – M24.**

Supplied with: Complete set of holders with bits and sockets, in a synthetic leather case. **Without cutting tools.**

Note: A reducing adapter (see No. 343000) can be used to easily change the existing **MT3** face mill arbor on the machine to accept MT4 or larger. Further holder sets, reducer pieces and individual holders available on request.

14 9650_2

Type		2	3
14B 14 9650	Set of holders	XXX	XXX
Shank		MT3	
for dies		M3 – M14	M16 – M24
for taps		M3 – M16	M4 – M24
Content: 1 each reducer piece for dies (mm)		20×7; 25×9; 30×11	—

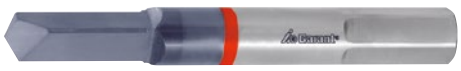
Garant Solid carbide tap drilling out tool

Solid carbide | Standard

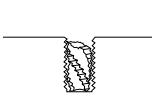
Strong plain shank with **hexagon** for mounting in a drill chuck and self-centring cutting edge.

Application: For **drilling out broken off taps. Stable clamping** is necessary, the hole must be dry and without cutting oil.

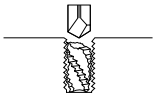
Note: v_c for material < 67 HRC 10 – 28 m/min.
Wear safety glasses.



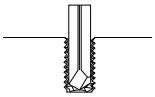
14 9830



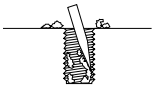
Grind oblique break-through points flat.



Approach the start several times in order to centre the boring-out tool.



Drill out with an even feed rate. Evacuate chips frequently.



Clean the bore and remove the residue.

for taps	11L 14 9830 Solid carbide drilling out tool plain shank with hexagon TiAlN	mm	L_{tot} mm	mm
M3	XXX	10	38	3
M4	XXX	14	46	4
M5	XXX	19	50	5
M6	XXX	23	50	6
M8	XXX	23	60	7
M10	XXX	25	100	9
M12	XXX	35	100	11

Tap extractor set

Number of drilling-out tools			5
11L 14 9831	Solid carbide drilling-out tool set in cartridge	TiAlN	XXX
Content: 1 each solid carbide drilling-out tool No. 149830			Sizes M3; M4; M5; M6; M8

14 9831

New products –
Machining – milling

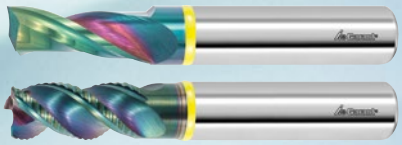
new

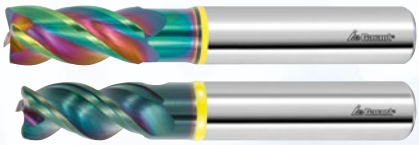
We use this symbol to tag new items in our range of catalogue products

Product group 19

Page **364**
GARANT Master Titan solid carbide milling cutter HSS

Product group 20

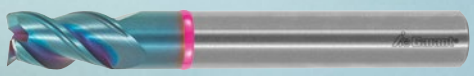




Page **382, 441, 422, 460**
Extension of GARANT Master ALU solid carbide milling cutters

Page **489 – 491**
PPC-HARD machining GARANT tools with innovative coating

Page **417, 444**
GARANT Master INOX M solid carbide milling cutter, SlotMachine solid carbide roughing end mill



Page **402**
GARANT Master Titan solid carbide mini-milling cutter

Page **402**
GARANT Master Steel solid carbide mini-milling cutter

Page **499**
GARANT solid carbide deburrer, spiral flutes

Product group 21

Pages **546 – 548**
GARANT Power Q Double
high feed rate indexable milling cutter

Page **593**
GARANT polygon milling inserts for parting off, with staggered toothing

Machining – Milling

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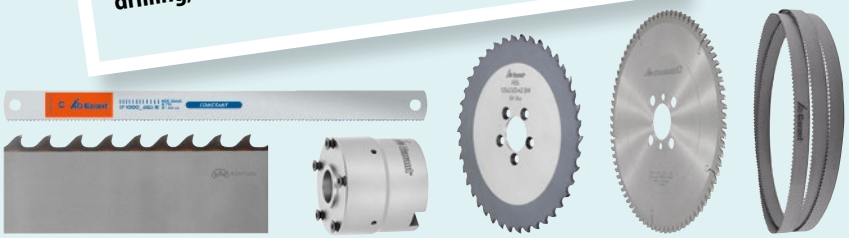
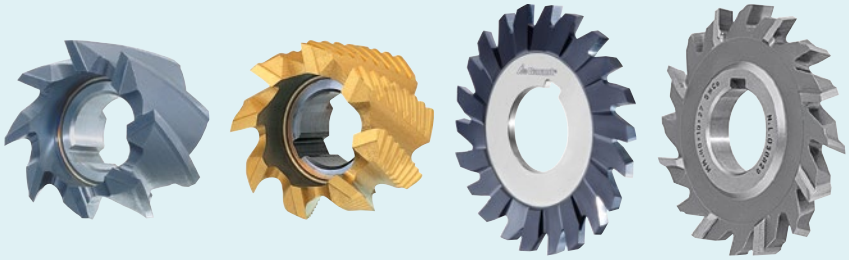


Garant · BAHCO · KOMET WITTMANN-KOMET · Re-Bo · RÖNTGEN · HOLEX

Metal band saw blades and metal circular saw blades, saw system

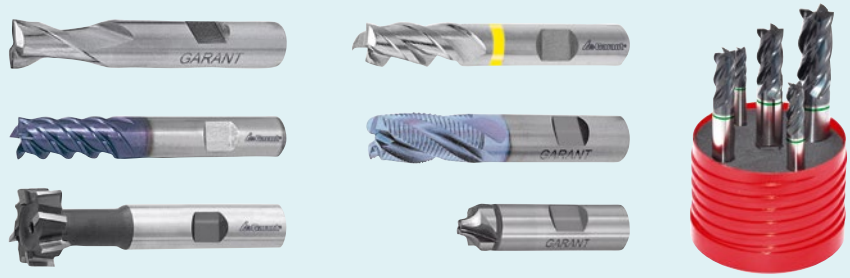
17 322 – 340



Garant

HPC
Milling cutters with bore
HSS and solid carbide

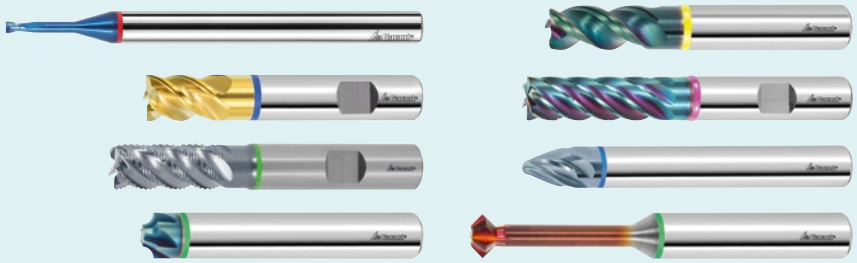
18 341 – 346



Garant · HOLEX

HPC / MTC
HSS milling cutters, sets, Woodruff keyseating cutters, T-slot cutters, dovetail milling cutters, ball nose slot drills, corner rounding cutters

19 347 – 367



Garant · HOLEX

Colour code DIN-ISO 513
HPC / MTC / TPC / PPC
Range overview Solid carbide milling
pages 368 – 380
GARANT Master families

20 368 – 515

Garant · KOMET mimatic Tool Systems · HOLEX

Range overview Modular milling
pages 516 – 518
Tool materials overview pages 519 – 521
face milling, corner milling, copy milling, chamfer milling, engraving, circular milling, parting-off milling

21 516 – 603

KENNAMETAL · KYOCERA

Modular
face milling, corner milling, copy milling

22 604 – 621

a = a

Power saw blades for power hacksaws

17 1000/1150 – **GARANT –** saw blade made of molybdenum alloyed high performance cutting steel **HSS (DMo5).** Due to constantly high hardness and extreme toughness, particularly **high cutting performances** are obtained (reduced cutting times and longer tool life). The precise set ensures a straight cut.

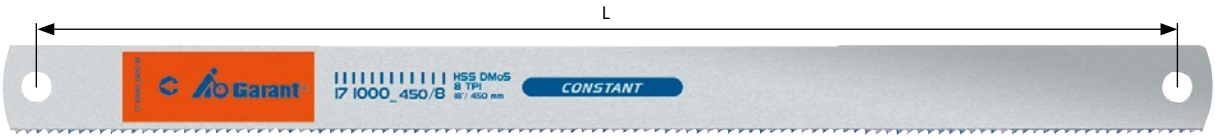
17 1100/1250 – **BAHCO bi-metal –** a strip of HSS teeth welded to a flexible blade body of special steel using electron beam welding in a vacuum. In this way the saw blades are extremely hard at the tooth tips, but have **enormous flexibility** and are unbreakable even **at high feed rates.**

17 1550/1650 – **KOMET bi-metal –** tooth tips of HSS-M3 and blade body of spring steel. For high cutting performance and feed rates. Unbreakable for maximum safety at the workplace.

Note:

17 1150/1250/1650 – **Especially for Kasto machines** (clamping holes offset from 38 mm blade width).
Important: The instructions included with the saw blades must be followed in all details.

17 1550/1650 – **KOMET** HSS saw blades: Other versions such as VP 7 (7° rake angle, variable pitch teeth) and P 13 (13° rake angle – especially for stainless steels) available on request on short delivery times.



17 1000 / 1150

Hardened HSS teeth strip
(electron beam welded)

Flexible blade body
made of special steel

17 1100 / 1250

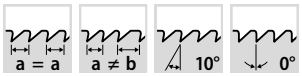
17 1550 / 1650

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	GG(G)	CuZn	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	K	N						
17 1000/1150		○	○	●	●	○														●			
17 1100/ 1250–17 1650		○	○	●	●	●	●	○						○		●	●	●		●			

Length L / TPI	11R 17 1000	16D 17 1100	16E 17 1550		Width			Thickness			Clamping hole ∅
	Power saw blade				17 1000	17 1100	17 1550	17 1000	17 1100	17 1550	
	HSS	bimetal	Ko-Bi3		mm	mm	mm	mm	mm	mm	mm
300/6	XXX	–	–	10	25	–	–	1.6	–	–	8.5
300/8	XXX	–	–	10	25	–	–	1.6	–	–	8.5
300/10	XXX	–	XXX	10	25	–	25	1.6	–	1.25	8.5
300/14	XXX	XXX	XXX	10	25	25	25	1.6	1.25	1.25	8.5
300/24	XXX	–	–	10	25	–	–	1.6	–	–	8.5
350/6	XXX	XXX	XXX	10	32	32	32	1.6	1.6	1.6	8.5
350/8	XXX	–	–	10	32	–	–	1.6	–	–	8.5
350/10	XXX	XXX	XXX	10	32	25	32	1.6	1.25	1.6	8.5
350/14	XXX	XXX	–	10	32	25	–	1.6	1.25	–	8.5
400/4	XXX	XXX	XXX	10	32	32	32	2	1.6	1.6	8.5
400/6	XXX	XXX	XXX	10	32	32	32	2	1.6	1.6	8.5
400/8	XXX	XXX	XXX	10	32	32	32	1.6	1.6	1.6	8.5
400/10	XXX	XXX	XXX	10	32	32	32	1.6	1.6	1.6	8.5
400/14	XXX	XXX	XXX	10	32	32	32	1.6	1.6	1.6	8.5
400/24	XXX	–	–	10	32	–	–	1.6	–	–	8.5
425/6	XXX	–	–	10	32	–	–	2	–	–	8.5
450/4	XXX	XXX	XXX	10	32	38	38	2	2	2	10.5
450/6	XXX	XXX	XXX	10	32	32	38	2	1.6	2	10.5
450/8	XXX	XXX	XXX	10	32	38	38	2	2	2	10.5
450/10	XXX	XXX	XXX	10	32	32	38	2	1.6	2	10.5
500/4	XXX	–	–	10	38	–	–	2	–	–	10.5
500/6	XXX	XXX	XXX	10	38	38	38	2	2	2	10.5
500/8	XXX	–	–	10	38	–	–	2	–	–	10.5
500/10	XXX	–	–	10	38	–	–	2	–	–	10.5
550/4	XXX	–	–	10	45	–	–	2.25	–	–	10.5
550/6	–	XXX	–	10	–	45	–	–	2.25	–	10.5
550/8	XXX	–	–	10	45	–	–	2.25	–	–	10.5
575/4	–	XXX	–	10	–	45	–	–	2.25	–	12.5
600/4	XXX	XXX	–	10	50	50	–	2.5	2.5	–	12.5
600/6	XXX	–	–	10	50	–	–	2.5	–	–	12.5
600/8	XXX	–	–	10	50	–	–	2.5	–	–	12.5

Length L / TPI	11R 17 1150 Garant	16D 17 1250 BAHCO	16E 17 1650 KOMET		Width		Thickness		Clamping hole ∅
	Power saw blade for Kasto				17 1150 17 1650	17 1250	17 1150 17 1650	17 1250	
	HSS	bimetal	Ko-Bi3		mm	mm	mm	mm	mm
300/6	XXX	–	–	10	32	–	2	–	8.5
300/8	XXX	–	–	10	32	–	2	–	8.5
300/10	XXX	–	–	10	32	–	2	–	8.5
350/4	XXX	–	–	10	32	–	2	–	8.5
350/6	XXX	–	–	10	32	–	2	–	8.5
350/8	XXX	–	–	10	32	–	2	–	8.5
350/10	XXX	–	–	10	32	–	2	–	8.5
400/8	XXX	–	–	10	32	–	2	–	8.5
400/10	XXX	–	–	10	32	–	2	–	8.5
450/4	XXX	XXX	XXX	10	38	38	2	2	8.5
450/6	XXX	XXX	XXX	10	38	38	2	2	8.5
450/8	XXX	–	–	10	38	–	2	–	8.5
450/10	–	XXX	XXX	10	38	38	2	2	8.5
500/4	XXX	–	–	10	50	–	2.5	–	10.5
500/6	XXX	–	–	10	50	–	2.5	–	10.5
500/8	XXX	–	–	10	50	–	2.5	–	10.5
550/4	XXX	XXX	–	10	45	50	2.25	2.5	10.5
550/6	XXX	–	–	10	45	–	2.25	–	10.5
550/8	XXX	–	–	10	45	–	2.25	–	10.5
550/10	XXX	–	–	10	45	–	2.25	–	10.5
575/3	XXX	–	–	10	50	–	2.5	–	10.5
575/4	XXX	XXX	XXX	10	50	50	2.5	2.5	10.5
575/6	XXX	XXX	–	10	50	50	2.5	2.5	10.5
575/8	XXX	–	–	10	50	–	2.5	–	10.5
650/4	XXX	XXX	–	10	50	50	2.5	2.5	10.5
650/6	–	XXX	XXX	10	50	50	2.5	2.5	10.5
650/8	XXX	–	–	10	50	–	2.5	–	10.5
700/4	XXX	XXX	XXX	10	50	50	2.5	2.5	10.5
700/6	XXX	XXX	–	10	50	50	2.5	2.5	10.5

RÖNTGEN Band saw blades in coils



Regular tooth pitch –Constant pitch with **0° rake angle** in plastic dispenser, no welded joint.

17 2000 – **RRR-Plus** made of alloyed tool steel, 30 m each coil.

17 2050/2100 – **bi-alpha-cobalt: High-performance bi-metal band saw blade** with high chrome content **spring steel backing** and cobalt alloyed (M42) HSS tooth tips (67–69HRC). **Extreme tooth tip hardness, flexible backing**, each roll 15 m.

Application: Particularly suitable for smaller and medium size cross sections (up to maximum 70 mm contact length).

Note:
- **Regular pitch teeth 10°:** Sizes 6/4H, 6/6H, 10/4H, 10/6H, 13/4H, 13/6H, 16/4H.
- **Variable pitch teeth 0°:** Size 6/1014, 10/1014, 13/1014.

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	CuZn	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	M	M	S	K	N						
17 2000				85	65											40			●	●	○	●	
17 2050/2100		100	60	85	65	55	35	20					30	20	20	40	60	○	●	●	○	●	

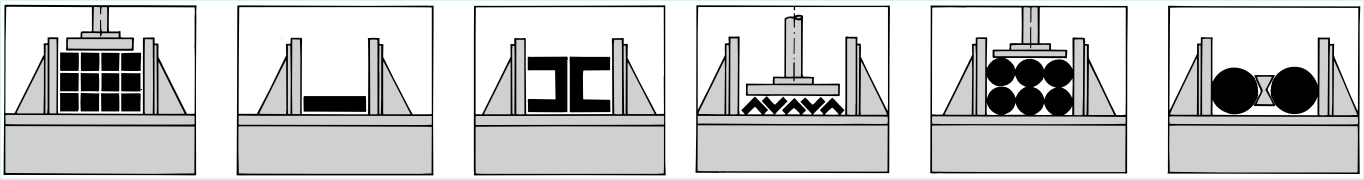
width mm / TPI	16F 17 2000 RRR Plus 30 m	16F 17 2050 Bandsaw blade bi-alfa-cobalt 15 m	16F 17 2100 bi-alfa-cobalt 15 m	Thickness 17 2000 mm	17 2050 mm	17 2100 mm
6/4H	XXX	–	–	0.65	–	–
6/6H	XXX	–	XXX	0.65	–	0.9
6/8	XXX	–	–	0.65	–	–
6/10	XXX	–	XXX	0.65	–	0.9
6/14	XXX	–	XXX	0.65	–	0.9
6/1014	–	XXX	XXX	–	0.6	0.9
6/18	XXX	–	–	0.65	–	–
6/24	XXX	–	–	0.65	–	–
8/8	XXX	–	–	0.65	–	–
8/10	XXX	–	–	0.65	–	–
8/14	XXX	–	–	0.65	–	–
8/18	XXX	–	–	0.65	–	–
8/24	XXX	–	–	0.65	–	–
10/4H	XXX	–	–	0.65	–	–
10/6H	XXX	XXX	XXX	0.65	0.6	0.9

width mm / TPI	16F 17 2000 RRR Plus 30 m	16F 17 2050 Bandsaw blade bi-alfa-cobalt 15 m	16F 17 2100 bi-alfa-cobalt 15 m	Thickness 17 2000 mm	17 2050 mm	17 2100 mm
10/8	XXX	–	XXX	0.65	–	0.9
10/10	XXX	–	XXX	0.65	–	0.9
10/14	XXX	–	XXX	0.65	–	0.9
10/1014	–	XXX	XXX	–	0.6	0.9
10/18	XXX	–	–	0.65	–	–
10/24	XXX	–	–	0.65	–	–
13/4H	XXX	–	(XXX)	0.65	–	0.9
13/6H	XXX	XXX	XXX	0.65	0.6	0.9
13/8	XXX	–	–	0.65	–	–
13/10	–	–	XXX	–	–	0.9
13/14	XXX	–	–	0.65	–	–
13/1014	–	XXX	–	–	0.6	–
16/4H	XXX	–	–	0.8	–	–
16/8	XXX	–	–	0.8	–	–

Garant RÖNTGEN HOLEX Band-saw blades

Clamping of the material

Clamp the material so that the band saw blade cuts with as little vibration as possible. When cutting material bundles, tack weld the ends together if necessary.
This increases the cutting performance and the blade life.



Running in new blades

At normal feed rates the sharp teeth of a new blade dig very aggressively into the material.
Therefore reduce the feed rate by 50 % and the cutting speed by 70 % for the first cuts.
After the blade has cut an area of about 400 cm^2, slowly increase the feed rate to the optimum value.
The working life of a band-saw blade is to a large extent dependant on controlled running in!

Coolant

The coolant helps to prevent the saw tooth and workpiece from overheating and to take the chips away from the cutting point.
Coolant is normally applied when sawing all steels. Cast iron on the other hand is usually sawn dry.
Cutting oil gives good results when sawing case-hardening steels, higher alloyed tool steels, heat-treatable steels, stainless steels and titanium.
Micro-spray systems give good results when sawing pipes and profiles. In this connection, note the need for a good chip clearance brush.

Cutting speed and feed rate

The cutting speed (blade speed) depends on the tensile strength, type and cross-section of the material to be sawn.
The greater the tensile strength, the lower the cutting speed should be. Smaller cross-sections can be sawn at higher speeds than larger cross-sections.
Thin-walled pipes and profiles, and sharp edges, are sawn at low feed rates; the feed rate (pressure) should be kept as constant as possible.

Material	Cutting speed in m/min bi-alfa-cobalt (M42)
General purpose steels / machining steels	80 – 90
Case-hardening steels / heat-treatable steels	45 – 75
Unalloyed tool steels / roller bearing steels	40 – 60
Alloyed tool steels / high speed steels	30 – 40
Stainless steels	20 – 35
Heat resistant steels High-temperature alloys	15 – 25

If vibration occurs adjust the cutting speed (m/min) to marginally faster or slower.
As the blade becomes more blunt increase the feed rate somewhat.

Assessing a cracked weld on the blade

Straight rupturing of the weld after a short period of use indicates a manufacturing fault.
Breaking of the weld after longer term use, the crack propagating as a zigzag, is an overload fracture.

Tooth pitches

Tooth pitch recommendations for **solid material:**
Recommendation: also state the rake angle.

For material thickness	Variable pitch teeth	Rake angle
< 25 mm	10/14	0°
15 – 40 mm	8/12	0°
25 – 50 mm	6/10	0°
35 – 70 mm	5/8	0°
40 – 90 mm	5/6	10°
50 – 120 mm	4/6	0° / 10°
50 – 150 mm	4/5	10°
80 – 180 mm	3/4	0° / 10°
130 – 350 mm	2/3	10°
150 – 400 mm	1,5/2	10°
200 – 600 mm	1.1/1.6	10°
> 500 mm	0.75/1.25	10°

Variable pitch teeth 3/4 0° and 4/6 0° are suitable only for pipes, profiles and girders, **not** for solid material. For sawing solid material of high-alloy and long-chipping materials, the band qualities bi-alfa Master No. 174050 and bi-alfa-RP Master No. 174100 are recommended in addition to 10° variable pitch teeth.

Tooth pitch recommendations for **pipes:**

Wall thickness S (mm)	Pipe outside∅ D (mm) Tooth pitch Z (tpi)									
	20	40	60	80	100	120	150	200	300	500
2	14	10/14	10/14	10/14	10/14	8/12	8/12	8/12	8/12	5/8
3	14	10/14	10/14	8/12	8/12	8/12	8/12	6/10	6/10	5/8
4	10/14	10/14	8/12	8/12	8/12	6/10	6/10	5/8	5/8	4/6
5	10/14	10/14	8/12	8/12	6/10	6/10	5/8	4/6	4/6	4/6
6	10/14	8/12	8/12	6/10	6/10	5/8	5/8	4/6	4/6	4/6
8	10/14	8/12	8/12	6/10	5/8	5/8	4/6	4/6	4/6	4/6
10		8/12	6/10	5/8	4/6	4/6	4/6	4/6	4/6	4/5
12		8/12	6/10	4/6	4/6	4/6	4/6	4/6	4/6	4/5
15		8/12	6/10	4/6	4/6	4/6	4/5	4/5	4/5	4/5
20			4/6	4/6	4/6	4/6	4/5	4/5	4/5	3/4
30				4/6	4/6	4/5	4/5	4/5	4/5	2/3
50							4/5	3/4	2/3	2/3
80								3/4	2/3	2/3
> 100									2/3	1.5/2

For thin-walled pipes (up to approx. 8 mm wall thickness) use preferably tooth pitches with 0° rake. **Rule of thumb:There should be at least 3 teeth in contact with the component.**

Blade width

The largest blade width permissible on the machine should be selected,
in order to achieve sufficient stability at higher feed rate forces.
When sawing curves, the blade width depends on the smallest radius to be cut (see table).

Radius (mm)	3	8	15	30	38	65	100	140
Blade width (mm)	3	5	6	8	10	13	16	20

HSS
Co8

a = a | a ≠ b | 10° | 0°

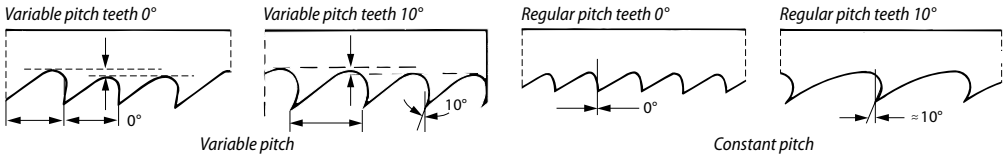
Metal band saw blades welded in standard lengths

GARANT – high-performance bi-metal band saw blade with wear-resistant **M42 teeth** and special flexible backing with increased load capacity.
RÖNTGEN – bi-alpha-cobalt: High-performance bi-metal band saw blade with high chrome content **spring steel backing** and cobalt alloyed (M42) HSS tooth tips (67–69HRC).
Extreme tooth tip hardness, flexible backing.
HOLEX – Production band saw blade with high cutting performance.

Application:
Variable pitch teeth 0° – very low vibration, for a large range of cross sections (for pipes and profiles, solid materials up to maximum 70 mm).
Variable pitch teeth 10° – general purpose for a wide range of cross-sections (for solid material from 50 mm).
Regular pitch teeth 0° – for small to medium cross-sections up to maximum 70 mm engagement length.
Regular pitch teeth 10° – for large cross-sections from 50 mm engagement.

Note: **Running in a new blade:** See GARANT machining handbook No. 110010 and information page.

GARANT
RÖNTGEN
HOLEX



Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	CuZn	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	M	M	S	K	N						
Combi 0° / Normal 0°		100		85	65	55	35	20								40		○	●	●	○		
Combi 10° / Normal 10°		100		85	65	55	35	20					30	20	20	40	60	●	●	●	○		

TPI	11S 17 3480 Garant	16F 17 3500 RÖNTGEN		Tooth type	Rake	Width	Thickness	Length
	Metal band saw blade 13×1138				degrees	mm	mm	mm
6/10	–	(XXX)	5	combi	0	13	0.6	1138
8/12	XXX	XXX	5	combi	0	13	0.6	1138
10/14	–	(XXX)	5	combi	0	13	0.6	1138

TPI	11S 17 3530 Garant	16F 17 3550 RÖNTGEN		Tooth type	Rake	Width	Thickness	Length
	Metal band saw blade 13×1325				degrees	mm	mm	mm
6/10	–	(XXX)	5	combi	0	13	0.6	1325
8/12	XXX	XXX	5	combi	0	13	0.6	1325
10/14	–	(XXX)	5	combi	0	13	0.6	1325

TPI	11S 17 3557 Garant	16F 17 3560 RÖNTGEN		Tooth type	Rake	Width	Thickness	Length
	Metal band saw blade 20×2375				degrees	mm	mm	mm
5/8	XXX	(XXX)	5	combi	0	20	0.9	2375
6/10	XXX	XXX	5	combi	0	20	0.9	2375
8/12	XXX	(XXX)	5	combi	0	20	0.9	2375
10/14	XXX	XXX	5	combi	0	20	0.9	2375

TPI	11S 17 3577 Garant	16F 17 3580 RÖNTGEN		Tooth type	Rake	Width	Thickness	Length
	Metal band saw blade 27×2450				degrees	mm	mm	mm
4/6H	XXX	(XXX)	5	combi	10	27	0.9	2450
4/6	–	XXX	5	combi	0	27	0.9	2450
5/8	XXX	XXX	5	combi	0	27	0.9	2450
6/10	XXX	XXX	5	combi	0	27	0.9	2450
8/12	XXX	XXX	5	combi	0	27	0.9	2450
10/14	XXX	(XXX)	5	combi	0	27	0.9	2450

TPI	11S 17 3597 Garant	16F 17 3600 RÖNTGEN	12S 17 3605 HOLEX		Tooth type	Rake	Width	Thickness	Length
	Metal band saw blade 27×2750					degrees	mm	mm	mm
4/6H	XXX	(XXX)	–	5	combi	10	27	0.9	2750
4/6	–	(XXX)	XXX	5	combi	0	27	0.9	2750
5/8	XXX	XXX	XXX	5	combi	0	27	0.9	2750
6/10	XXX	(XXX)	XXX	5	combi	0	27	0.9	2750
8/12	XXX	XXX	XXX	5	combi	0	27	0.9	2750
10/14	XXX	(XXX)	–	5	combi	0	27	0.9	2750

TPI	11S 17 3627 Garant	16F 17 3650 RÖNTGEN		Tooth type	Rake	Width	Thickness	Length
	Metal band saw blade 27×2835				degrees	mm	mm	mm
4/6H	XXX	(XXX)	5	combi	10	27	0.9	2835
5/8	XXX	XXX	5	combi	0	27	0.9	2835
6/10	XXX	(XXX)	5	combi	0	27	0.9	2835
8/12	XXX	XXX	5	combi	0	27	0.9	2835
10/14	XXX	(XXX)	5	combi	0	27	0.9	2835

TPI	11S 17 3657 Garant	16F 17 3660 RÖNTGEN		Tooth type	Rake	Width	Thickness	Length
	Metal band saw blade 27×2910				degrees	mm	mm	mm
4/6H	XXX	XXX	5	combi	10	27	0.9	2910
5/8	XXX	XXX	5	combi	0	27	0.9	2910
6/10	XXX	(XXX)	5	combi	0	27	0.9	2910
8/12	XXX	(XXX)	5	combi	0	27	0.9	2910

TPI	11S 17 3667 Garant	16F 17 3680 RÖNTGEN		Tooth type	Rake	Width	Thickness	Length
	Metal band saw blade 27×2950				degrees	mm	mm	mm
4/6H	XXX	(XXX)	5	combi	10	27	0.9	2950
5/8	XXX	XXX	5	combi	0	27	0.9	2950
6/10	XXX	(XXX)	5	combi	0	27	0.9	2950
8/12	XXX	XXX	5	combi	0	27	0.9	2950

TPI	11S 17 3687 Garant	16F 17 3700 RÖNTGEN		Tooth type	Rake	Width	Thickness	Length
	Metal band saw blade 27×3150				degrees	mm	mm	mm
4/6H	XXX	(XXX)	5	combi	10	27	0.9	3150
5/8	XXX	XXX	5	combi	0	27	0.9	3150
6/10	XXX	(XXX)	5	combi	0	27	0.9	3150
8/12	XXX	XXX	5	combi	0	27	0.9	3150
10/14	XXX	(XXX)	5	combi	0	27	0.9	3150

TPI	11S 17 3737 Garant	16F 17 3750 RÖNTGEN	12S 17 3755 HOLEX		Tooth type	Rake	Width	Thickness	Length
	Metal band saw blade 27×3660					degrees	mm	mm	mm
3/4H	XXX	XXX	XXX	5	combi	10	27	0.9	3660
4/6H	XXX	XXX	XXX	5	combi	10	27	0.9	3660
5/6H	–	XXX	XXX	5	combi	10	27	0.9	3660
3/4	–	XXX	XXX	5	combi	0	27	0.9	3660
4/6	–	XXX	XXX	5	combi	0	27	0.9	3660
5/8	XXX	XXX	XXX	5	combi	0	27	0.9	3660
6/10	XXX	XXX	XXX	5	combi	0	27	0.9	3660
8/12	XXX	XXX	XXX	5	combi	0	27	0.9	3660
10/14	XXX	XXX	XXX	5	combi	0	27	0.9	3660
4H	–	XXX	–	5	normal	10	27	0.9	3660
6H	–	XXX	–	5	normal	10	27	0.9	3660
4	–	XXX	–	5	normal	0	27	0.9	3660
6	–	XXX	–	5	normal	0	27	0.9	3660
8	–	XXX	–	5	normal	0	27	0.9	3660
10	–	XXX	–	5	normal	0	27	0.9	3660

TPI	11S 17 3787 Garant	16F 17 3800 RÖNTGEN		Tooth type	Rake	Width	Thickness	Length
	Metal band saw blade 27×3830				degrees	mm	mm	mm
3/4H	XXX	XXX	5	combi	10	27	0.9	3830
4/6H	XXX	XXX	5	Combi	10	27	0.9	3830
5/6H	–	(XXX)	5	combi	10	27	0.9	3830
5/8	XXX	XXX	5	combi	0	27	0.9	3830
6/10	XXX	XXX	5	combi	0	27	0.9	3830
8/12	XXX	(XXX)	5	combi	0	27	0.9	3830
10/14	XXX	(XXX)	5	combi	0	27	0.9	3830

TPI	11S 17 3837 Garant	16F 17 3850 RÖNTGEN		Tooth type	Rake	Width	Thickness	Length
	Metal band saw blade 27×4150				degrees	mm	mm	mm
3/4H	XXX	XXX	5	combi	10	27	0.9	4150
4/6H	XXX	XXX	5	Combi	10	27	0.9	4150
5/6H	–	(XXX)	5	combi	10	27	0.9	4150
5/8	XXX	(XXX)	5	combi	0	27	0.9	4150
6/10	XXX	XXX	5	combi	0	27	0.9	4150
8/12	XXX	(XXX)	5	combi	0	27	0.9	4150

TPI	11S 17 3847 Garant	16F 17 3852 RÖNTGEN		Tooth type	Rake	Width	Thickness	Length
	Metal band saw blade 34×3800				degrees	mm	mm	mm
3/4H	XXX	XXX	5	combi	10	34	1.1	3800
4/6H	XXX	XXX	5	combi	10	34	1.1	3800

TPI	11S 17 3848 Garant	16F 17 3854 RÖNTGEN		Tooth type	Rake	Width	Thickness	Length
	Metal band saw blade 34×4100				degrees	mm	mm	mm
2/3H	XXX	XXX	5	combi	10	34	1.1	4100
3/4H	XXX	XXX	5	combi	10	34	1.1	4100
4/6H	XXX	XXX	5	combi	10	34	1.1	4100

TPI	11S 17 3849 Garant	16F 17 3856 RÖNTGEN		Tooth type	Rake	Width	Thickness	Length
	Metal band saw blade 34×4150				degrees	mm	mm	mm
3/4H	XXX	XXX	5	combi	10	34	1.1	4150
4/6H	XXX	XXX	5	combi	10	34	1.1	4150

TPI	11S 17 3851 Garant	16F 17 3858 RÖNTGEN		Tooth type	Rake	Width	Thickness	Length
	Metal band saw blade 34×4400				degrees	mm	mm	mm
3/4H	XXX	XXX	5	combi	10	34	1.1	4400
4/6H	XXX	XXX	5	combi	10	34	1.1	4400

TPI	11S 17 3853 Garant	16F 17 3859 RÖNTGEN		Tooth type	Rake	Width	Thickness	Length
	Metal band saw blade 34×4530				degrees	mm	mm	mm
2/3H	XXX	XXX	5	combi	10	34	1.1	4530
3/4H	XXX	XXX	5	combi	10	34	1.1	4530

TPI	11S 17 3855 Garant	16F 17 3861 RÖNTGEN		Tooth type	Rake	Width	Thickness	Length
	Metal band saw blade 34×4570				degrees	mm	mm	mm
2/3H	XXX	XXX	5	combi	10	34	1.1	4570
3/4H	XXX	XXX	5	combi	10	34	1.1	4570

TPI	11S 17 3857 Garant	16F 17 3860 RÖNTGEN		Tooth type	Rake	Width	Thickness	Length
	Metal band saw blade 34×4640				degrees	mm	mm	mm
2/3H	XXX	XXX	5	combi	10	34	1.1	4640
3/4H	XXX	XXX	5	combi	10	34	1.1	4640
4/6H	XXX	XXX	5	combi	10	34	1.1	4640

TPI	11S 17 3863 Garant	16F 17 3864 RÖNTGEN		Tooth type	Rake	Width	Thickness	Length
	Metal band saw blade 34×5000				degrees	mm	mm	mm
2/3H	XXX	XXX	5	combi	10	34	1.1	5000
3/4H	XXX	XXX	5	combi	10	34	1.1	5000

TPI	11S 17 3865 Garant	16F 17 3866 RÖNTGEN		Tooth type	Rake	Width	Thickness	Length
	Metal band saw blade 34×5090				degrees	mm	mm	mm
2/3H	XXX	XXX	5	combi	10	34	1.1	5090
3/4H	XXX	XXX	5	combi	10	34	1.1	5090

TPI	11S 17 3868 Garant	16F 17 3870 RÖNTGEN		Tooth type	Rake	Width	Thickness	Length
	Metal band saw blade 41×4115				degrees	mm	mm	mm
2/3H	XXX	XXX	5	combi	10	41	1.3	4115
3/4H	XXX	XXX	5	combi	10	41	1.3	4115

TPI	11S 17 3871 Garant	16F 17 3872 RÖNTGEN		Tooth type	Rake	Width	Thickness	Length
	Metal band saw blade 41×4640				degrees	mm	mm	mm
2/3H	XXX	XXX	5	combi	10	41	1.3	4640
3/4H	XXX	XXX	5	combi	10	41	1.3	4640

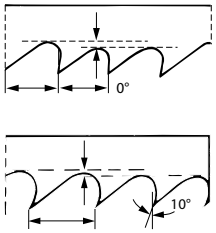
TPI	11S 17 3873 Garant	16F 17 3874 RÖNTGEN		Tooth type	Rake	Width	Thickness	Length
	Metal band saw blade 41×5334				degrees	mm	mm	mm
2/3H	XXX	XXX	5	combi	10	41	1.3	5334
3/4H	XXX	XXX	5	combi	10	41	1.3	5334

TPI	11S 17 3875 Garant	16F 17 3876 RÖNTGEN		Tooth type	Rake	Width	Thickness	Length
	Metal band saw blade 41×5800				degrees	mm	mm	mm
2/3H	XXX	XXX	5	combi	10	41	1.3	5800
3/4H	XXX	XXX	5	combi	10	41	1.3	5800

HSS Co8 | a ≠ b

Metal band saw blades welded to length as ordered

Note: **Unit price =** price per metre length × saw-blade length **including the welded joint.**
Ordering data: Length×width×thickness (mm) tooth format.
For example: 10 pcs. band saw blades No. 174000, 4870×34×1.1 – 3/4H – 10°.
Use 3/4 0° and 4/6 0° variable pitch teeth only for pipes and profiles!



Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	CuZn	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	N						
17 3905–17 4025		100		**85**	**65**	**55**	**35**	**20**						30				○	●	●	○		
17 4050–17 4063		100		85	65	55	35	20						**30**	**20**	**20**	**60**		●	●	○		
17 4100/4105														**30**	**20**	**20**	**60**		●	●	○		

Variable pitch teeth 0° / 10°

17 3905 – **High-performance bi-metal band saw blade** with wear-resistant **M42 teeth** and special flexible backing with increased load capacity.
17 4000 – **bi-alpha-cobalt: High-performance bi-metal band saw blade** with high chrome content **spring steel backing** and cobalt alloyed (M42) HSS tooth tips (67–69 HRC). **Extreme tooth tip hardness, flexible backing.**
17 4025 – **Production band-saw blade** for high cutting performance.

Description: **Variable pitch teeth, 0° –** Very low vibration, for a large range of cross sections (for pipes and profiles, solid materials up to max. 70 mm).
Variable pitch teeth 10° – General purpose for a large range of cross sections (for solid materials from 50 mm).
3/4 – 10/14 teeth per inch: Variable pitch teeth 0°
1.5/2H – 5/6H teeth per inch: Variable pitch teeth 10°

Width×thickness mm	20×0,9	27×0,9	34×1,1	41×1,3	54×1,6	
11S **17 3905** Garant Metal band saw blade	(XXX)	(XXX)	(XXX)	(XXX)	(XXX)	5
2/3H TPI	–	–	●	●	●	
3/4H TPI	–	●	●	●	●	
4/6H TPI			●			
5/8 TPI	●	●	●	–	–	
6/10 TPI	●	●	●	–	–	
8/12 TPI	●	●	●	–	–	
10/14 TPI	●	●	–	–	–	
Tooth type	combi					

width×thickness mm	13×0,6	20×0,9	27×0,9	34×1,1	41×1,3	54×1,3	54×1,6	
16F **17 4000** RÖNTGEN Metal band saw blade **bi-alpha cobalt**	(XXX)	(XXX)	(XXX)	(XXX)	(XXX)	(XXX)	(XXX)	5
1.5/2H TPI	–	–	–	–	●	●	●	
2/3H TPI	–	–	●	●	●	●	●	
3/4H TPI	–	–	●	●	●	●	●	
4/5H TPI	–	–	●	●	●	●	●	
4/6H TPI	–	–	●	●	●	●	●	
5/6H TPI	–	–	●	●	–	–	●	
3/4 TPI	–	–	●	●	●	–	–	
4/6 TPI	–	–	●	●	●	–	–	
5/8 TPI	–	●	●	●	●	–	–	
6/10 TPI	●	●	●	●	●	–	–	
8/12 TPI	●	●	●	●	–	–	–	
10/14 TPI	●	●	●	–	–	–	–	
Tooth type	combi							

width×thickness mm	13×0,6	20×0,9	27×0,9	34×1,1	41×1,3	
12S **17 4025** HOLEX Metal band saw blade	(XXX)	(XXX)	(XXX)	(XXX)	(XXX)	5
1.5/2H TPI	–	–	–	–	●	
2/3H TPI	–	–	●	●	●	
3/4H TPI	–	–	●	●	●	
4/5H TPI	–	–	●	●	●	
4/6H TPI	–	–	●	●	●	
5/6H TPI	–	–	●	●	–	
3/4 TPI	–	–	●	●	●	
4/6 TPI	–	–	●	●	●	
5/8 TPI	–	●	●	●	–	
6/10 TPI	●	●	●	●	–	
8/12 TPI	●	●	●	●	–	
10/14 TPI	●	●	●	–	–	
Tooth type	combi					

Variable pitch teeth 10° ground

bi-alfa Master: High-performance bi-metal band saw blade with high chrome content **spring steel backing** and cobalt alloyed (M42) HSS tooth tips (67–69 HRC). **Extreme tooth tip hardness, flexible backing. With specially ground tooth tips.** A chamfered high tooth guarantees best blade guiding in the saw cut, a pair of lower finishing teeth ensures absolutely straight cutting.

Description: **Variable pitch teeth 10° – General purpose** for a large range of cross sections (for solid materials from 50 mm).

width×thickness	mm	27×0,9	34×1,1	41×1,3	
16F **17 4050**	RÖNTGEN Metal band saw blade **bi-alpha Master**	(XXX)	(XXX)	(XXX)	5
1.5/2H TPI		–	–	●	
2/3H TPI		–	●	●	
3/4H TPI		●	●	●	
Tooth type			combi		

Variable pitch teeth 6°

17 4062 – **bi-alfa Profile: High-performance bi-metal band saw blade** with high chrome content **spring steel backing** and cobalt alloyed (M42) HSS tooth tips (67–69 HRC). **Extreme tooth tip hardness, flexible backing.**
With **strengthened tooth back and alternating tooth pitch** for work prone to vibration, such as profiles, pipes, and girders.

17 4063 – **Bi-alfa profile WS: High-performance bi-metal band saw blade** with high chrome content **spring steel backing** and cobalt alloyed (M42) HSS tooth tips (67-69 HRC). **Extreme tooth tip hardness, flexible backing.**
Additional wide alternating offset prevents the blade jamming. For load-bearing profiles, pipes, and girders.

width×thickness	mm	13×0,6	20×0,9	27×0,9	34×1,1	41×1,3	54×1,6	
16F **17 4062**	RÖNTGEN Metal band saw blade **bi-alpha Profile**	(XXX)	(XXX)	(XXX)	(XXX)	(XXX)	(XXX)	5
3/4 TPI		–	–	●	●	●	●	
4/6 TPI		–	–	●	●	●	●	
5/7 TPI		–	–	●	●	●	–	
8/11 TPI		●	●	●	●	–	–	
12/16 TPI		–	●	●	–	–	–	
Tooth type				combi				

width×thickness	mm	34×1,1	41×1,3	54×1,6	
16F **17 4063**	RÖNTGEN Metal band saw blade **bi-alpha Profile WS**	(XXX)	(XXX)	(XXX)	5
2/3 TPI			●		
3/4 TPI			●		
Tooth type			combi		

Variable pitch teeth 16° ground

bi-alpha RP Master: High-performance bi-metal band saw blade with high chrome content **spring steel backing** and cobalt alloyed (M42) **HSS tooth tips (67-69 HRC)** for economic parting off of solid materials. The **rake angle of 16°** permits easier chip separation and better chip evacuation. This leads to smooth running and a long tool life.

width×thickness	mm	34×1,1	41×1,3	54×1,6	67×1,6	80×1,6	
16F **17 4100**	RÖNTGEN Metal band saw blade **bi-alpha RP master**	(XXX)	(XXX)	(XXX)	(XXX)	(XXX)	5
0.75/1.25 TPI		–	–	–	●	●	
1.1/1.6 TPI		–	–	●	●	●	
1.5/2 TPI		–	●	●	●	–	
2/3 TPI		●	●	●	–	–	
3/4 TPI		●	●	●	–	–	
Tooth type				combi			

Master Supreme: Support blade of high-alloy heat treatable steel. **Tooth tips are of HSS-M51** (high cobalt and tungsten content) for best thermal and mechanical wear resistance. The special tooth geometry coupled with a **rake angle of 16°** permit cutting of high and very alloy steels, especially in large material cross-sections.

Width×thickness	mm	34×1,1	41×1,3	54×1,3	54×1,6	67×1,6	80×1,6	
16F **17 4105**	RÖNTGEN Metal band saw blade **Master Supreme**	(XXX)	(XXX)	(XXX)	(XXX)	(XXX)	(XXX)	5
0.75/1.25 TPI		–	–	–	–	●	●	
1.1/1.6 TPI		–	–	–	●	●	●	
1.5/2 TPI		–	●	●	●	●	–	
2/3 TPI		●	●	●	●	–	–	
3/4 TPI		●	–	–	–	–	–	
Tooth type				combi				

Carbide | a ≠ b

RÖNTGEN

Carbide-tipped band saw blades, welded to length as ordered

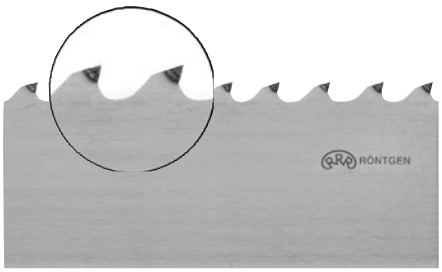
X-RAY carbide titanium:
Carbide-tipped, unset band saw blade with ground tooth profiles. (Hardness approx. 1600 HV). Very high metal removal rate.

Note:
When placing an enquiry, please indicate the band saw machine (manufacturer and type), band dimensions, material, and material cross section.
General-purpose small workshop machines (tilting frame bandsaws with saw blade width 27×0.9 mm) are generally not designed for use with carbide-tipped saw blades.
Our application engineers are happy to give further technical advice.
For further information see also the GARANT machining handbook No. 110020.
Unit price = price per running metre × band length **incl. welded joint.**
Delivery time approx. 3 weeks.
Information required when placing an order: Item number and size (teeth per inch)×desired length (mm).
For example: 5 pieces No. 174113 size 2/3×4640 mm.

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	CuZn	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	M	M	S	K	N						
17 4111–17 4117/ 4161–17 4167	100	100	70	90	80	70	60	50					70	60	60	80	80	●		●			
17 4121–17 4131									100	90	85									●			
17 4182–17 4187	110	110	80	100	90	80	65	55					80	65	65	90	90	●		●			

Carbide-titanium MU

Carbide-tipped unset band saw blade with a **3-tooth group and 10° positive rake angle**.
As an "Allrounder" suitable for tool steels, stainless steels, chrome-nickel steels and high-speed steels, nickel-based alloys, aluminium and for all steel grades up to tensile strength approx. 1600 N/mm².

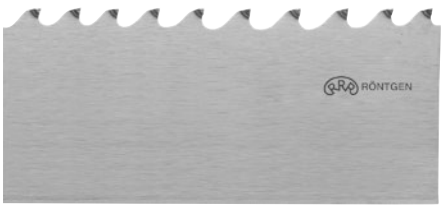


17 4111

TPI	16F 17 4111	16F 17 4112	16F 17 4113	16F 17 4114	16F 17 4115	16F 17 4116	16F 17 4117	Tooth type	Rake
	Carbide-tipped saw blade **Carbide - titanium MU**								
	Width×thickness 27×0.9 mm	Width×thickness 34×1.1 mm	Width×thickness 41×1.3 mm	Width×thickness 54×1.3 mm	Width×thickness 54×1.6 mm	Width×thickness 67×1.6 mm	Width×thickness 80×1.6 mm		degrees
0,85/1,15	–	–	–	(XXX)	(XXX)	(XXX)	(XXX)	Combi	10
1,1/1,6	–	–	–	–	(XXX)	(XXX)	(XXX)	Combi	10
1,5/2	–	–	(XXX)	(XXX)	(XXX)	(XXX)	–	Combi	10
2/3	–	(XXX)	(XXX)	(XXX)	(XXX)	–	–	Combi	10
3/4	(XXX)	(XXX)	(XXX)	–	–	–	–	Combi	10

Carbide-titanium B0

Carbide-tipped unset band saw blade with **roughing and finishing teeth and a rake angle of 0°**. Suitable for induction-hardened materials, through-hardened materials of hardness of 50 – 64 HRC to be sawn on lighter bandsaws.

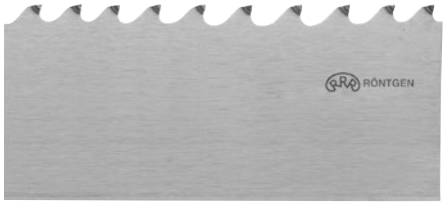


17 4121

TPI	16F 17 4121	16F 17 4122	16F 17 4123	16F 17 4124	Tooth type	Rake
	Carbide-tipped saw blade **Carbide - titanium B0**					
	Width×thickness 27×0.9 mm	Width×thickness 34×1.1 mm	Width×thickness 41×1.3 mm	Width×thickness 54×1.6 mm		degrees
1,5/2	–	–	(XXX)	–	Combi	0
2/3	–	(XXX)	(XXX)	(XXX)	Combi	0
3/4	(XXX)	(XXX)	(XXX)	–	Combi	0

Carbide-titanium MUSN

Carbide-tipped unset band saw blade with a **3-tooth group and 18° negative rake angle**.
Suitable for induction-hardened materials, through-hardened materials from a hardness of 50 – 64 HRC to be sawn on high-power bandsaws.



17 4130

TPI	16F 17 4130	16F 17 4131	Tooth type	Rake
	Carbide-tipped saw blade **Carbide-titanium MUSN**			
	Width×thickness 34×1.1 mm	**Width×thickness 41×1.3 mm**		degrees
1,5/2	–	(XXX)	Combi	–18
2/3	–	(XXX)	Combi	–18
3/4	(XXX)	(XXX)	Combi	–18

Carbide-titanium SET

Carbide-tipped set band saw blade with a **stepped set and an 11° positive rake angle**.
Particularly suitable for sawing materials with internal stresses up to tensile strength approx. 1600 N/mm² (< 50 HRC).
Special setting pattern prevents the saw band jamming in large material cross-sections.
Also generally advantageous for older bandsaws.

17 4161

TPI	16F 17 4161	16F 17 4162	16F 17 4163	16F 17 4164	16F 17 4165	16F 17 4166	16F 17 4167	Tooth type	Rake
	Carbide-tipped saw blade **Carbide-titanium SET**								
	Width×thickness 27×0.9 mm	**Width×thickness 34×1.1 mm**	**Width×thickness 41×1.3 mm**	**Width×thickness 54×1.3 mm**	**Width×thickness 54×1.6 mm**	**Width×thickness 67×1.6 mm**	**Width×thickness 80×1.6 mm**		degrees
0,85/1,15	–	–	–	–	–	(XXX)	(XXX)	Combi	11
1,1/1,6	–	–	–	–	–	(XXX)	(XXX)	Combi	11
1,5/2	–	–	(XXX)	(XXX)	(XXX)	–	–	Combi	11
2/3	–	(XXX)	(XXX)	(XXX)	(XXX)	–	–	Combi	11
3/4	(XXX)	–	–	–	–	–	–	Combi	11

Carbide-titanium forte C

Carbide-tipped unset band saw blade with a **3-tooth group and 10° positive rake angle** in a coated version.
The coating is achieves a hardness of about 3,800 HV and permits a of 10 - 30% increase in performance by the carbide-titanium MU.
The need to run the blade in at lower parameter values is eliminated, allowing efficient and economical use from the outset.

17 4182

TPI	16F 17 4182	16F 17 4183	16F 17 4184	16F 17 4185	16F 17 4186	16F 17 4187	Tooth type	Rake
	Carbide-tipped saw blade **Carbide-titanium forte C**							
	Width×thickness 34×1.1 mm	**Width×thickness 41×1.3 mm**	**Width×thickness 54×1.3 mm**	**Width×thickness 54×1.6 mm**	**Width×thickness 67×1.6 mm**	**Width×thickness 80×1.6 mm**		degrees
0,85/1,15	–	–	–	–	(XXX)	–	Combi	10
1,1/1,6	–	–	–	–	(XXX)	(XXX)	Combi	10
1,5/2	–	(XXX)	(XXX)	(XXX)	–	–	Combi	10
2/3	(XXX)	(XXX)	(XXX)	(XXX)	–	–	Combi	10
3/4	–	(XXX)	–	–	–	–	Combi	10

RÖNTGEN Metal band-saw blades

Tooth spacing for carbide-titanium saw blades

Tooth pitch	Material Ø
0.85/1.15	> 500 mm
1.1/1.6	350 – 600 mm
1.5/2	150 – 400 mm
2/3	100 – 250 mm
3/4	50 – 120 mm

Type **carbide-titanium ALU** (specially for aluminium materials) available on request.
Different versions are available depending on the available bandsaw and component shape (plates, castings, pipes).

HSS

Re-Bo Metal circular saw blades

DIN 1837 A fine-toothed with raked teeth form A. Straight teeth with relatively small indentations.

17 5000 – All blades are hollow ground to give side clearance. All sizes with 200 mm ∅ and very thin blades have a bore collar for stabilisation. Accuracy, tooth form, and side clearance grinding according to DIN 1840.

17 5500 – **DIN 1838 B coarse-toothed** with curved form B. Curved teeth with relatively large tooth indentations.

17 6000 – **DIN 1838 C coarse-toothed** with curved form C. High performance tooth pitch (HZ) **with high teeth and lower finishing teeth.** The roughing tooth is 0.15 – 0.30 mm higher than the finishing tooth and is chamfered at both tooth corners. In this way both types of teeth share the cutting work.

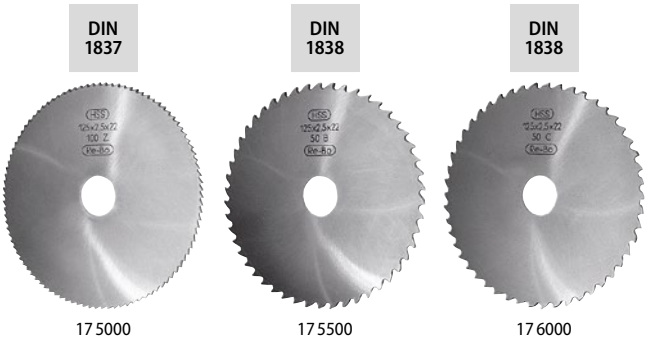
Application:

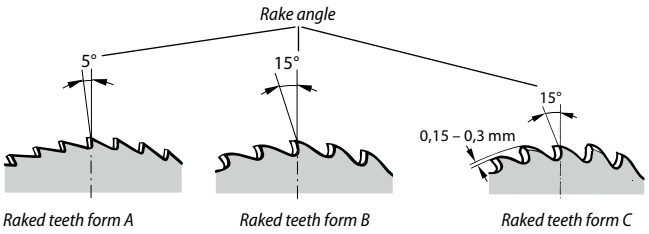
17 5000 – For thin-walled components and small cutting depths.

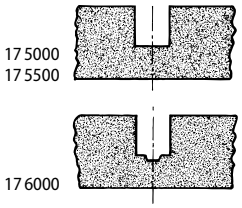
17 5500 – These blades are suitable for more universal use due to the improved chip formation and larger gullets compared to No. 175000. Should be used for thicker materials and greater cutting depths.

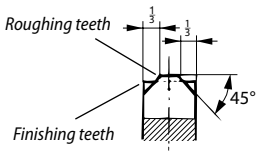
17 6000 – Particularly suitable for cutting workpieces with low to medium tensile strength. High cutting performance due to the chip breaking tooth form.
Please note: If the component is not cut through, but only cut into, the bottom of the cut will have an additional slot due to the projecting high tooth.

Note:	The concentricity and axial run-out values are considerably better than the figures according to DIN 1840, in some cases by up to 50 %.









Arbors for saw blades
∅ 20 – 100 mm
see No. 345510 / 345555

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	GG(G)	CuZn	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	K	N						
17 5000				**37**	**22**	**20**	15							11	11	**27**	**400**	●		●		○	○
17 5500/6000		800	600	**37**	**22**	**20**	15							11	11	**27**	400	●		●		○	○

∅× thickness	17A **17 5000** Metal circular saw blade	Thickness	Bore ∅	No. of teeth Z
mm	**fine**	mm	mm	
20×0,2	XXX	0.2	5	80
20×0,25	(XXX)	0.25	5	64
20×0,3	XXX	0.3	5	64
20×0,4	XXX	0.4	5	64
20×0,5	XXX	0.5	5	50
20×0,6	XXX	0.6	5	50
20×0,8	XXX	0.8	5	50
20×1	XXX	1	5	40
20×1,2	XXX	1.2	5	40
20×1,6	XXX	1.6	5	40
20×2	XXX	2	5	32
20×2,5	(XXX)	2.5	5	32
20×3	(XXX)	3	5	32
20×6	(XXX)	6	5	24
25×0,2	(XXX)	0.2	8	80
25×0,3	(XXX)	0.3	8	80
25×0,4	(XXX)	0.4	8	64
25×0,5	XXX	0.5	8	64
25×0,6	XXX	0.6	8	64
25×0,8	XXX	0.8	8	50
25×1	XXX	1	8	50
25×1,2	XXX	1.2	8	50
25×1,6	XXX	1.6	8	40
25×2	XXX	2	8	40

∅× thickness	17A **17 5000** Metal circular saw blade	Thickness	Bore ∅	No. of teeth Z
mm	**fine**	mm	mm	
25×2,5	XXX	2.5	8	40
25×3	(XXX)	3	8	32
32×0,2	XXX	0.2	8	100
32×0,25	(XXX)	0.25	8	100
32×0,3	XXX	0.3	8	80
32×0,4	XXX	0.4	8	80
32×0,5	XXX	0.5	8	80
32×0,6	XXX	0.6	8	64
32×0,8	XXX	0.8	8	64
32×1	XXX	1	8	64
32×1,2	XXX	1.2	8	50
32×1,6	XXX	1.6	8	50
32×2	XXX	2	8	50
32×2,5	XXX	2.5	8	40
32×3	XXX	3	8	40
32×6	(XXX)	6	8	32
40×0,2	XXX	0.2	10	128
40×0,25	(XXX)	0.25	10	100
40×0,3	XXX	0.3	10	100
40×0,4	XXX	0.4	10	100
40×0,5	XXX	0.5	10	80
40×0,6	XXX	0.6	10	80
40×0,8	XXX	0.8	10	80
40×1	XXX	1	10	64

Ø× thickness	17A 17 5000 Metal circular saw blade fine	17A 17 5500 Metal circular saw blade coarse	17A 17 6000 Metal circular saw blade coarse HZ	Thick-ness	Bore Ø	No. of teeth Z 17 5000	No. of teeth Z 17 5500 17 6000
mm				mm	mm		
40×1,2	XXX	–	–	1.2	10	64	–
40×1,6	XXX	–	–	1.6	10	64	–
40×2	XXX	–	–	2	10	50	–
40×2,5	XXX	–	–	2.5	10	50	–
40×3	XXX	–	–	3	10	50	–
40×4	XXX	–	–	4	10	40	–
40×5	(XXX)	–	–	5	10	40	–
40×6	(XXX)	–	–	6	10	40	–
50×0,2	XXX	–	–	0.2	13	128	–
50×0,3	XXX	–	–	0.3	13	128	–
50×0,4	(XXX)	–	–	0.4	13	100	–
50×0,5	XXX	XXX	–	0.5	13	100	50
50×0,6	XXX	XXX	–	0.6	13	100	50
50×0,8	XXX	XXX	–	0.8	13	80	40
50×1	XXX	XXX	(XXX)	1	13	80	40
50×1,2	XXX	XXX	(XXX)	1.2	13	80	40
50×1,6	XXX	XXX	(XXX)	1.6	13	64	32
50×2	XXX	XXX	(XXX)	2	13	64	32
50×2,5	(XXX)	(XXX)	(XXX)	2.5	13	64	32
50×3	(XXX)	(XXX)	(XXX)	3	13	50	24
50×4	(XXX)	(XXX)	(XXX)	4	13	50	24
50×6	(XXX)	(XXX)	(XXX)	6	13	40	20
63×0,25	XXX	–	–	0.25	16	160	–
63×0,3	XXX	–	–	0.3	16	128	–
63×0,4	XXX	–	–	0.4	16	128	–
63×0,5	XXX	XXX	–	0.5	16	128	64
63×0,6	XXX	(XXX)	–	0.6	16	100	50
63×0,8	XXX	XXX	–	0.8	16	100	50
63×1	XXX	XXX	XXX	1	16	100	50
63×1,2	XXX	XXX	XXX	1.2	16	80	40
63×1,6	XXX	XXX	(XXX)	1.6	16	80	40
63×2	XXX	XXX	XXX	2	16	80	40
63×2,5	XXX	XXX	(XXX)	2.5	16	64	32
63×3	XXX	XXX	(XXX)	3	16	64	32
63×4	(XXX)	XXX	(XXX)	4	16	64	32
63×5	(XXX)	(XXX)	(XXX)	5	16	50	24
63×6	(XXX)	(XXX)	(XXX)	6	16	50	24
80×0,3	XXX	–	–	0.3	22	160	–
80×0,4	XXX	–	–	0.4	22	160	–
80×0,5	XXX	XXX	–	0.5	22	128	64
80×0,6	XXX	(XXX)	–	0.6	22	128	64
80×0,8	XXX	XXX	–	0.8	22	128	64
80×1	XXX	XXX	XXX	1	22	100	50
80×1,2	XXX	(XXX)	XXX	1.2	22	100	50
80×1,6	XXX	XXX	(XXX)	1.6	22	100	50
80×2	XXX	XXX	XXX	2	22	80	40

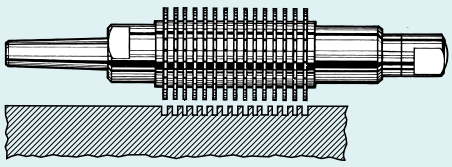
Ø× thickness	17A 17 5000 Metal circular saw blade fine	17A 17 5500 Metal circular saw blade coarse	17A 17 6000 Metal circular saw blade coarse HZ	Thick-ness	Bore Ø	No. of teeth Z 17 5000	No. of teeth Z 17 5500 17 6000
mm				mm	mm		
80×2,5	XXX	XXX	(XXX)	2.5	22	80	40
80×3	XXX	XXX	(XXX)	3	22	80	40
80×4	XXX	(XXX)	(XXX)	4	22	64	32
80×5	(XXX)	(XXX)	(XXX)	5	22	64	32
80×6	(XXX)	(XXX)	(XXX)	6	22	64	32
100×0,5	XXX	XXX	–	0.5	22	160	80
100×0,6	XXX	(XXX)	–	0.6	22	160	80
100×0,8	XXX	XXX	–	0.8	22	128	64
100×1	XXX	XXX	XXX	1	22	128	64
100×1,2	XXX	XXX	(XXX)	1.2	22	128	64
100×1,6	XXX	XXX	XXX	1.6	22	100	50
100×2	XXX	XXX	XXX	2	22	100	50
100×2,5	XXX	XXX	(XXX)	2.5	22	100	50
100×3	XXX	XXX	(XXX)	3	22	80	40
100×4	(XXX)	XXX	(XXX)	4	22	80	40
100×5	(XXX)	(XXX)	(XXX)	5	22	80	40
125×0,6	XXX	XXX	–	0.6	22	160	80
125×0,8	(XXX)	(XXX)	–	0.8	22	160	80
125×1	XXX	XXX	XXX	1	22	160	80
125×1,2	XXX	(XXX)	XXX	1.2	22	128	64
125×1,6	XXX	XXX	XXX	1.6	22	128	64
125×2	XXX	XXX	XXX	2	22	128	64
125×2,5	(XXX)	XXX	(XXX)	2.5	22	100	50
125×3	XXX	XXX	XXX	3	22	100	50
125×4	(XXX)	(XXX)	(XXX)	4	22	100	50
125×5	(XXX)	(XXX)	(XXX)	5	22	80	40
125×6	(XXX)	(XXX)	(XXX)	6	22	80	40
160×1	XXX	(XXX)	(XXX)	1	32	160	80
160×1,2	(XXX)	(XXX)	(XXX)	1.2	32	160	80
160×1,6	XXX	XXX	XXX	1.6	32	160	80
160×2	XXX	XXX	XXX	2	32	128	64
160×2,5	(XXX)	(XXX)	(XXX)	2.5	32	128	64
160×3	(XXX)	XXX	XXX	3	32	128	64
160×4	(XXX)	(XXX)	(XXX)	4	32	100	50
160×5	(XXX)	(XXX)	(XXX)	5	32	100	50
160×6	(XXX)	(XXX)	(XXX)	6	32	100	50
200×1	XXX	(XXX)	(XXX)	1	32	200	100
200×1,2	XXX	(XXX)	(XXX)	1.2	32	200	100
200×1,6	XXX	(XXX)	(XXX)	1.6	32	160	80
200×2	XXX	XXX	XXX	2	32	160	80
200×2,5	(XXX)	XXX	(XXX)	2.5	32	160	80
200×3	(XXX)	(XXX)	XXX	3	32	128	64
200×4	(XXX)	(XXX)	(XXX)	4	32	128	64
200×5	(XXX)	(XXX)	(XXX)	5	32	128	64
200×6	(XXX)	(XXX)	(XXX)	6	32	100	50

Metal circular saw blades for special applications

Please make a note on your order if you want to use the metal circular saw blades in sets. These blades will then be gauged as a set and ground plane parallel as a precision matched set, hollow ground from teeth to collar (spacer ring Ø). This arrangement must be made to order. We also need further information on the order if dimensional tolerances are tighter than DIN, special tooth formats or fully surface ground types for keyways or pinholes etc. are required.

On request:

Metal circular saw blades with hard coating "Re-Bo-Tin" or "Re-Bo-Top" for difficult machining applications.



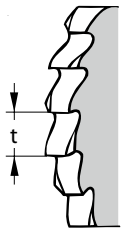
HSS

Metal circular saw blades

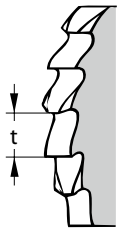
Application: For low speed machines (approx. 50 rpm).
Pitch t: (tooth form).

- 4 mm (BW) – For profiles and pipes with 1.0 – 1.5 mm wall thickness.
- 5 / 6 mm (HZ) –For medium profiles, pipes and solid bar with 1.5 – 20 mm wall thickness / cross-section.
- 7 / 8 mm (HZ) – For thick profiles and solid bar up to approx. 50 mm wall thickness / cross-section.
- 10 – 16 mm (HZ) – For extra thick cross-sections and solid bar more than 50 mm.

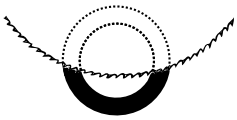
Note:
- **For stainless steels (such as V2A)** the correct cutting speed and lubrication is crucial (see information in the machining handbook No. 110020).
- The concentricity and axial run-out values are considerably better than those to DIN 1840, in some cases by up to 50 %.

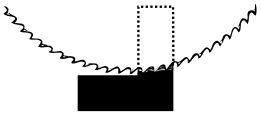


*t 4 mm = **BW***
Curved teeth set alternately



*t ab 5 mm = **HZ***
Tooth configuration with roughing and finishing teeth





Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	CuZn	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	M	M	S	K	N						
17 7000/7200/7400		800	600	**37**	**22**	**20**	15						11	11	15	**27**	400	●		●		○	○
17 7050/7250/7450		800	600	**37**	**22**	20										**27**	400	●		●		○	○
17 7070		800	800	**55**	**42**	**38**	**28**						**24**	20	26	**45**	600	●	●	●	●	○	○

Metal circular saw blades, fine version

17 7000 – **German top quality product.** Precision tooth geometry and very fine ground side faces. Significant increase in service life and protection against edge build-up due to the **nitrided surface.**

17 7050 – Precise format and good quality for a competitive price. **Vaporised surface** protects against edge build-up.

17 7000

17 7050

∅×thickness	17B 17 7000 Re-Bo	12T 17 7050 HOLEX	Thickness	Bore ∅	No. of teeth Z	Pitch t	Drive holes number/∅/pitch circle	suitable for saw makes
	Circular saw blade **fine**							
mm			mm	mm		mm	mm	
225×2/K	XXX	XXX	2	32	180	4	2/8/45	Eisele
225×2	(XXX)	XXX	2	40	180	4	2/8/55	Eisele
250×2/K	–	XXX	2	32	200	4	2/8.5/45 and 4/11/63	Adige; Berg & Schmid; Bewo; IBP; Thomas
250×2	XXX	XXX	2	40	200	4	2/8/55 and 4/12/64	Eisele
250×2,5	(XXX)	–	2.5	40	200	4	2/8/55 and 4/12/64	Eisele
275×2	XXX	XXX	2	40	220	4	2/8/55 and 4/12/64	Eisele
275×2,5	XXX	XXX	2.5	40	220	4	2/8/55 and 4/12/64	Eisele; Trennjäger
300×2,5/K	–	XXX	2.5	32	220	4	2/8.5/45 and 2/9/50 and 2/11/63	Adige; Berg & Schmid; Bewo; IBP; Thomas
300×2,5	XXX	–	2.5	40	220	4	2/8/55 and 4/12/64	Eisele
315×2,5	XXX	–	2.5	40	220	4	2/8/55 and 4/12/64	Eisele
315×3	XXX	XXX	3	40	160	6	2/8/55 and 4/12/64	Eisele
350×3	XXX	XXX	3	40	180	6	2/8/55 and 4/12/64	Eisele
370×3/G	–	XXX	3	50	160	7	4/15/80	Kaltenbach
400×3/G	–	XXX	3	50	180	7	4/15/80	Kaltenbach
400×3,5	(XXX)	–	3.5	40	160	8	2/11/65	Eisele

Metal circular saw blades, medium version

177070 – Top quality **with TiAlN coating** for the highest blade life requirements. Shorter sawing times due to higher cutting speeds.

177200 – **German top quality product.** Precision tooth geometry and very fine ground side faces. Significant increase in service life and protection against edge build-up due to the **nitrided surface.**

177250 – Precise format and good quality for a competitive price. **Vaporised surface** protects against edge build-up.

Note:

177070 – **Successor product to No. 177060.**

177070

177200

177250

∅×thickness	11T 177070	17B 177200	12T 177250	Thickness	Bore ∅	No. of teeth Z	Pitch t	Drive holes number/∅/pitch circle	suitable for saw makes
	Garant	Re-Bo	HOLEX						
	Circular saw blade **medium**								
mm	TiAlN			mm	mm		mm	mm	
225×2/K	–	XXX	XXX	2	32	120	6	2/8/45	Eisele
225×2	–	(XXX)	XXX	2	40	120	6	2/8/55	Eisele
250×2/K	–	–	XXX	2	32	160	5	2/8.5/45 and 4/11/63	Adige; Berg & Schmid; Bewo; IBP; Thomas
250×2	XXX	XXX	XXX	2	40	128	6	2/8/55 and 4/12/64	Eisele
250×2,5	–	XXX	–	2.5	40	128	6	2/8/55 and 4/12/64	Eisele
275×2	–	XXX	XXX	2	40	140	6	2/8/55 and 4/12/64	Eisele
275×2,5	XXX	XXX	XXX	2.5	40	140	6	2/8/55 and 4/12/64	Eisele; Trennjäger
300×2,5/K	–	–	XXX	2.5	32	160	6	2/8.5/45 and 2/9/50 and 2/11/63	Adige; Berg & Schmid; Bewo; IBP; Thomas
300×2,5	XXX	XXX	–	2.5	40	160	6	2/8/55 and 4/12/64	Eisele
315×2,5	XXX	XXX	–	2.5	40	160	6	2/8/55 and 4/12/64	Eisele
315×3	–	XXX	XXX	3	40	120	8	2/8/55 and 4/12/64	Eisele
350×3	XXX	XXX	XXX	3	40	140	8	2/8/55 and 4/12/64	Eisele
370×3/G	–	–	XXX	3	50	120	10	4/15/80	Kaltenbach
400×3	–	(XXX)	–	3	40	128	10	2/11/55	Eisele
400×3/G	–	–	XXX	3	50	100	12	4/15/80	Kaltenbach
400×3,5	–	(XXX)	–	3.5	40	128	10	2/11/65	Eisele

Metal circular saw blades, coarse version

177400 – **German top quality product.** Precision tooth geometry and very fine ground side faces. Significant increase in service life and protection against edge build-up due to the **nitrided surface.**

177450 – Precise format and good quality for a competitive price. **Vaporised surface** protects against edge build-up.

177400

177450

∅×thickness	17B 177400	12T 177450	Thickness	Bore ∅	No. of teeth Z	Pitch t	Drive holes number/∅/pitch circle	suitable for saw makes
	Re-Bo	HOLEX						
	Circular saw blade **coarse**							
mm			mm	mm		mm	mm	
225×2/K	–	XXX	2	32	90	8	2/8/45	Eisele
225×2	(XXX)	XXX	2	40	90	8	2/8/55	Eisele
250×2/K	–	XXX	2	32	128	6	2/8.5/45 and 4/11/63	Adige; Berg & Schmid; Bewo; IBP; Thomas
250×2	(XXX)	XXX	2	40	100	8	2/8/55 and 4/12/64	Eisele
275×2	(XXX)	XXX	2	40	110	8	2/8/55 and 4/12/64	Eisele
275×2,5	XXX	XXX	2.5	40	110	8	2/8/55 and 4/12/64	Eisele; Trennjäger
300×2,5/K	–	XXX	2.5	32	120	8	2/8.5/45 and 2/9/50 and 2/11/63	Adige; Berg & Schmid; Bewo; IBP; Thomas
300×2,5	XXX	–	2.5	40	120	8	2/8/55 and 4/12/64	Eisele
315×2,5	XXX	–	2.5	40	120	8	2/8/55 and 4/12/64	Eisele
315×3	(XXX)	XXX	3	40	100	10	2/8/55 and 4/12/64	Eisele
350×3	XXX	XXX	3	40	110	10	2/8/55 and 4/12/64	Eisele
370×3/G	–	XXX	3	50	100	12	4/15/80	Kaltenbach
400×3/G	–	XXX	3	50	80	16	4/15/80	Kaltenbach
400×3,5	(XXX)	–	3.5	40	100	12	2/11/65	Eisele

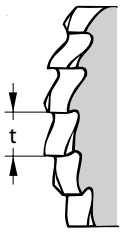
HSS E

Re-Bo VA circular saw blades, for stainless steels

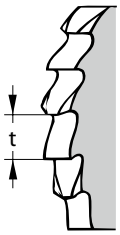
Precision toothing and very fine ground side faces.
Rake angle especially for stainless steels.
Nitrided surface: hard, durable protection against edge build-up.
Suitable for: **EISELE** and **TRENNJAEGER** cold circular saws.
Application: **Pitch t:** (tooth form)

- 3 mm (BW) – For thin pipes, profiles, sheet metal with 1 – 2 mm wall thickness.
- 4 mm (BW) – For pipes, profiles, sheet metal with 1.5 – 4 mm wall thickness.
- 6 mm (HZ) – For pipes, profiles and solid material above 4 mm wall thickness or cross–section up to a maximum of. 50 mm.
- 8 mm (HZ) – For solid material above 50 mm.

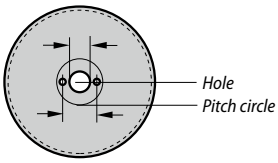
Note:
- For optimum performance and service life: use coolant concentrate No. 084260.
- The concentricity and axial run-out values are considerably better than the figures according to DIN 1840, in some cases by up to 50 %.

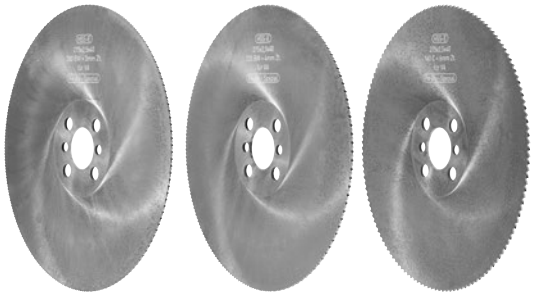


*t 3/4 mm = **BW***
Curved teeth set alternately



*t 6/8 mm = **HZ***
Tooth configuration with roughing and finishing teeth




17 7500 17 7520 17 7540

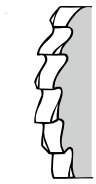
Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	CuZn	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	M	M	S	K	N						
17 7500–17 7540				37	22	20	15	11					11	11	15	27	400	●		●		○	○

Ø×thickness	17B 17 7500	17B 17 7520	17B 17 7540	Thick-ness	Bore Ø	No. of teeth Z			Pitch t			Drive holes number/Ø/pitch circle
	Stainless steel circular saw blade					17 7500	17 7520	17 7540	17 7500	17 7520	17 7540	
mm	fine	medium	coarse	mm	mm				mm	mm	mm	mm
250×2	XXX	XXX	(XXX)	2	40	250	200	128	3	4	6	2/9/55 and 4/12/64
275×2,5	XXX	XXX	XXX	2.5	40	280	220	140	3	4	6	2/9/55 and 4/12/64
300×2,5	(XXX)	(XXX)	(XXX)	2.5	40	220	160	120	4	6	8	2/9/55 and 4/12/64
315×3	XXX	XXX	(XXX)	3	40	220	160	120	4	6	8	2/9/55 and 4/12/64
350×3	XXX	XXX	XXX	3	40	280	180	140	4	6	8	2/9/55 and 4/12/64

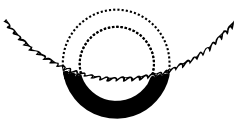
HSS E

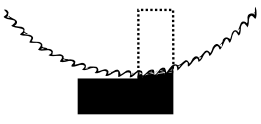
Re-Bo Metal circular saw blades

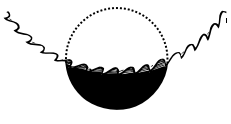
Top quality German product, hollow ground with precision tooth format.
Suitable for: **GF** and **AXX AiR.**


*Tooth form **BW** curved teeth set alternately*

17 8860


F = fine


M = medium


G = coarse

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	CuZn	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	M	M	S	K	N						
17 8860		800	600	37	22	20	15						11	11	15	27	400	●		●		●	○

Ø×thick-ness	17B 17 8860	Thickness	Bore Ø	No. of teeth Z
	Metal circular saw blade			
mm		mm	mm	
63×1,6M	(XXX)	1.6	16	64
68×1,6F	(XXX)	1.6	16	72

Ø×thick-ness	17B 17 8860	Thickness	Bore Ø	No. of teeth Z
	Metal circular saw blade			
mm		mm	mm	
68×1,6M	(XXX)	1.6	16	64
68×1,6G	(XXX)	1.6	16	44

Carbide

Garant

Carbide tipped circular saw blades for non-ferrous metals

High performance toothing with high teeth and lower finishing teeth. The trapezoidal carbide tips cut easily and generate clean cut surfaces.

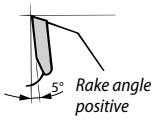
Advantage: Particularly suitable for hard anodised profile material.

Application: **On high-speed machines.**
F = fine tooth pitch for thin walled profiles or plates up to 5 mm thickness.
M = medium tooth pitch for profiles and pipes with greater than 5 mm thickness.
G = coarse tooth pitch for solid material such as bars and rods.

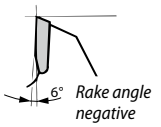
17 9600 – **Positive rake angle 5°** for smooth, burr-free cutting on machines with saw blade infeed from below or horizontal. Very suitable for cutting to size, for mitre and ripping cuts on profiles, and for cutting into solid material.

17 9700 – **Negative rake angle 6°** for use on machines with oscillating saw blade infeed from above. Advantageous for thin profiles.

Note:
- Recommended cutting speed: 40 – 80 m/s, for harder materials such as alloys, brass, bronze it is preferable to use the lowest recommended speed.
- Pay special attention to maintaining an even feed rate; this prevents damage.
- Size 400×. . . – When ordering please be sure to indicate: bore dia. (if other than 30 mm), and if necessary the number, and pitch circle diameter of the drive holes (ML).
  Example: 1×400×40 M – 2 ML 12/64.
  Further circular saw blades can be found in Group 58.

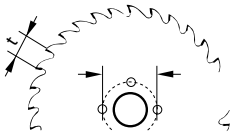


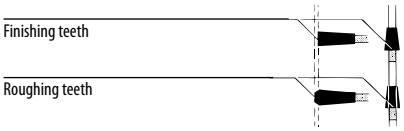
Rake angle positive



Rake angle negative

17 9600


Pitch circle diameter of drive holes.



Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	CuZn	Graphite GRP CRP					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	N	N					
17 9600/9700		850	650														450				●	●	○

∅×bore	11T 17 9600	11T 17 9700	Thickness	Bore ∅	No. of teeth Z	Pitch t	Drive holes number/∅/ pitch circle	suitable for saw makes
	Carbide-tipped circular saw blade							
mm	Rake angle positive	Rake angle negative	mm	mm		mm	mm	
250×32F	XXX	(XXX)	3.2	32	80	9.8	2/11/63	Kaltenbach
250×32M	(XXX)	(XXX)	3.2	32	60	13.1	2/11/63	Kaltenbach
250×32G	(XXX)	–	3.2	32	40	19.6	2/11/63	Kaltenbach
250×40M	(XXX)	–	3.2	40	60	13.1	2/8/55 and 4/12/64	Eisele; Trennjäger; Ulmia
275×40M	XXX	–	3.2	40	72	12.3	2/8/55 and 4/12/64	Eisele
300×30F	XXX	(XXX)	3.2	30	96	9.8	2/7/42 and 2/11/63	Kaltenbach
300×30M	XXX	(XXX)	3.2	30	72	13.1	2/7/42 and 2/11/63	Kaltenbach
300×30G	XXX	–	3.2	30	48	18.1	2/7/42 and 2/11/63	Kaltenbach
350×40F	(XXX)	(XXX)	3.4	40	108	10	2/8/55 and 4/12/64	Eisele
350×40M	XXX	XXX	3.4	40	84	13.1	2/8/55 and 4/12/64	Eisele
370×50F	(XXX)	–	3.6	50	120	9.7	4/15/80	Kaltenbach
370×50M	(XXX)	–	3.6	50	96	12.1	4/15/80	Kaltenbach
400×30M	(XXX)	–	4	30	96	13.1	2/11/63	Kaltenbach
400×30G	(XXX)	–	4	30	72	18.5	2/11/63	Kaltenbach

Reducing ring for circular saw blades with bore 40 mm

External and internal ∅ each H7 fit, **thickness 3 mm.**

Application: For circular saw blades No. 177000 - 177540 with 40 mm bore diameter, for use in machines with 32 mm arbor.

17B 17 9710	Reducing ring 40 / 32 for circular saw blades	XXX

Solid carbide

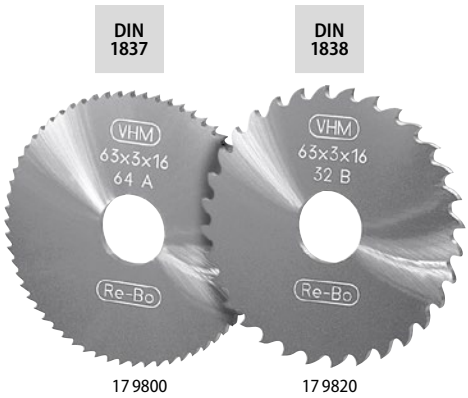
Re-Bo Solid carbide circular saw blades

Top quality German product with **precision toothing** and **hollow ground mirror finish sides**. Compared to HSS saw blades, the cutting speed can be increased by a factor of 3 to 4.

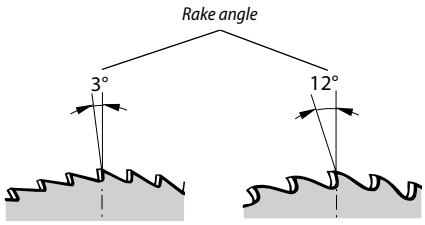
17 9800 – **DIN 1837 A fine-toothed** with **raked teeth to form A** with chisel edge.
For thin-walled components and small cutting depths.

17 9820 – **DIN 1838 B coarse-toothed** with **curved teeth to form B** with chisel edge.
For cutting larger cross sections and greater cutting depths.
These blades are suitable for more universal use due to the improved chip formation and larger gullets compared to the fine-toothed version.

Note:
- Stable conditions of machine and component clamping are important prerequisites. If these conditions are disregarded the circular saw blade may break.
- The values for radial run-out and axial run-out are considerably better than the values specified in DIN 1840.
- Special sizes on request.



17 9800 17 9820



Raked teeth form A *Curved teeth form B*

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	CuZn	Graphite GRP CRP	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	M	M	S	K	N	N						
17 9800/9820		1200	700	200	140	140	90	40				110	100	90	125	400	600	○		●		●	●

Ø×thickness mm	17 9800 Solid carbide circular saw blade DIN 1837 A fine	17 9820 Solid carbide circular saw blade DIN 1838 B coarse	Thickness mm	Bore Ø mm	No. of teeth Z 17 9800	No. of teeth Z 17 9820
20×0,25	(XXX)	(XXX)	0.25	5	64	32
20×0,3	(XXX)	(XXX)	0.3	5	64	32
20×0,5	XXX	XXX	0.5	5	50	24
20×0,6	(XXX)	(XXX)	0.6	5	50	24
20×1	XXX	XXX	1	5	40	20
20×1,6	(XXX)	(XXX)	1.6	5	40	20
25×0,3	(XXX)	(XXX)	0.3	8	80	40
25×0,5	XXX	XXX	0.5	8	64	32
25×0,6	(XXX)	(XXX)	0.6	8	64	32
25×0,8	(XXX)	(XXX)	0.8	8	50	24
25×1	XXX	XXX	1	8	50	24
25×1,2	(XXX)	(XXX)	1.2	8	50	24
25×1,6	(XXX)	(XXX)	1.6	8	40	20
25×2	XXX	XXX	2	8	40	20
30×0,25	(XXX)	(XXX)	0.25	8	80	40
30×0,3	(XXX)	(XXX)	0.3	8	80	40
30×0,4	XXX	(XXX)	0.4	8	80	40
30×0,5	XXX	XXX	0.5	8	80	40
30×0,6	(XXX)	(XXX)	0.6	8	64	32
30×0,8	XXX	XXX	0.8	8	64	32
30×1	XXX	XXX	1	8	64	32
30×1,2	(XXX)	(XXX)	1.2	8	50	24
30×1,6	XXX	XXX	1.6	8	50	24
30×2	XXX	XXX	2	8	50	24
30×2,5	(XXX)	(XXX)	2.5	8	40	20
40×0,4	XXX	XXX	0.4	10	100	50
40×0,5	XXX	XXX	0.5	10	80	40
40×0,6	XXX	XXX	0.6	10	80	40
40×0,8	(XXX)	(XXX)	0.8	10	80	40
40×1	XXX	XXX	1	10	64	32
40×1,2	(XXX)	(XXX)	1.2	10	64	32
40×1,6	XXX	XXX	1.6	10	64	32
40×2	XXX	XXX	2	10	50	24
40×2,5	(XXX)	(XXX)	2.5	10	50	24
40×3	XXX	XXX	3	10	50	24
50×0,5	XXX	XXX	0.5	13	100	50
50×0,6	(XXX)	(XXX)	0.6	13	100	50
50×0,8	(XXX)	(XXX)	0.8	13	80	40

Ø×thickness mm	17 9800 Solid carbide circular saw blade DIN 1837 A fine	17 9820 Solid carbide circular saw blade DIN 1838 B coarse	Thickness mm	Bore Ø mm	No. of teeth Z 17 9800	No. of teeth Z 17 9820
50×1	XXX	XXX	1	13	80	40
50×1,2	XXX	XXX	1.2	13	80	40
50×1,6	XXX	XXX	1.6	13	64	32
50×2	XXX	XXX	2	13	64	32
50×3	XXX	(XXX)	3	13	50	24
63×0,3	(XXX)	(XXX)	0.3	16	128	64
63×0,5	XXX	XXX	0.5	16	128	64
63×0,6	(XXX)	(XXX)	0.6	16	100	50
63×0,8	(XXX)	(XXX)	0.8	16	100	50
63×1	XXX	XXX	1	16	100	50
63×1,2	XXX	XXX	1.2	16	80	40
63×1,6	XXX	XXX	1.6	16	80	40
63×2	XXX	XXX	2	16	80	40
63×2,5	XXX	XXX	2.5	16	64	32
63×3	XXX	XXX	3	16	64	32
80×0,5	XXX	XXX	0.5	22	128	64
80×0,6	(XXX)	(XXX)	0.6	22	128	64
80×0,8	(XXX)	(XXX)	0.8	22	128	64
80×1	XXX	XXX	1	22	100	50
80×1,2	(XXX)	(XXX)	1.2	22	100	50
80×1,6	XXX	XXX	1.6	22	100	50
80×2	XXX	XXX	2	22	80	40
80×2,5	(XXX)	(XXX)	2.5	22	80	40
80×3	(XXX)	XXX	3	22	80	40
100×0,6	(XXX)	(XXX)	0.6	22	128	64
100×0,8	(XXX)	(XXX)	0.8	22	128	64
100×1	XXX	XXX	1	22	128	64
100×1,2	(XXX)	(XXX)	1.2	22	128	64
100×1,6	XXX	XXX	1.6	22	100	50
100×2	XXX	XXX	2	22	100	50
100×3	XXX	XXX	3	22	80	40
125×0,8	(XXX)	(XXX)	0.8	22	160	80
125×1	XXX	(XXX)	1	22	160	80
125×1,2	(XXX)	(XXX)	1.2	22	128	64
125×2	(XXX)	XXX	2	22	128	64
125×2,5	(XXX)	(XXX)	2.5	22	100	50
125×3	(XXX)	(XXX)	3	22	100	50

Garant Adapter for saw system

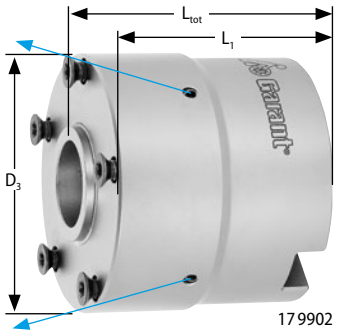
Ni-coated for improved wear resistance.

Application: Together with circular saw blades for sawing system.
For slitting and parting off milling.

Note:

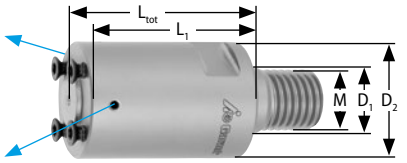
17 9902 – Mounting bore ∅ = interface to arbor.

17 9907 – For arbors for saw blades with thread see catalogue section 3.
Successor product to No. 179905.



17 9902

for saw blade ∅	210 17 9902 Saw blade adapter with bore	L_1	L_{tot}	∅ D_3	Mounting bore ∅	Number of attachment holes	Pitch circle of attachment holes	Set of insert screws
mm		mm	mm	mm	mm		mm	
125	XXX	43	45	38	16	5	31.5	219985 (TX15; 4.2 Nm)
160	XXX	43	45	50	22	5	43.5	219985 (TX15; 4.2 Nm)



17 9907

for saw blade ∅	210 17 9907 Saw blade adapter with thread	L_1	L_{tot}	∅ D_1 h6	∅ D_2	Mounting thread M	Number of attachment holes	Pitch circle of attachment holes	Set of insert screws
mm		mm	mm	mm	mm			mm	
40/50	XXX	35	36.8	12.5	24	M12	3	17.5	219985 (TX15; 4.2 Nm)
63/80/100	XXX	40	41.8	17	32	M16	4	25.5	219985 (TX15; 4.2 Nm)

Garant Circular saw blades for saw system

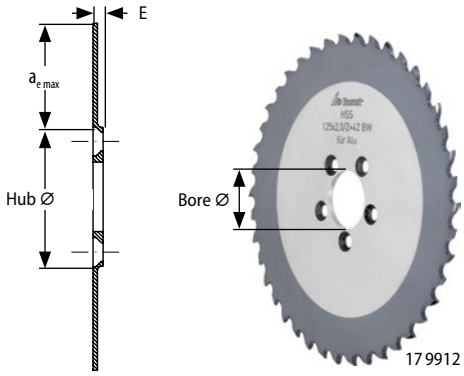
Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	CuZn	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	N						
17 9912	400	600	300	50	40									20	15		300	○		●			○
17 9915		800	400	180	130	120	85	35						90	70		200	○		●			○
17 9925		300	150																	●			○
17 9930				150	125	110	80													●			

HSS

ae/D	12 %	8 %	5 %
fz factor	1.0	1.15	1.25

Optimised geometry and coating.
Extra deep relief ground for reliable chip evacuation.
For flat base of the slot.

Note:
- Tooth profile BW.
- The tolerances for the circular saw blade diameter are considerably better than the values permissible to DIN 1837/1838, in some cases by up to 50%.



17 9912

∅×thickness	17C 17 9912 Circular saw blade TiAlN	Thickness	Collar thickness E	$a_{e\,max}$	Hub ∅	Bore ∅	No. of teeth Z	Drive holes number/∅/pitch circle	suitable adapter	Alu f_z
mm		mm	mm	mm	mm	mm		mm		mm
63×2	XXX	2	2.5	14	32	16	24	4/4.4/25.5	179907 63/80/100	0.01
80×2	XXX	2	2.5	22	32	16	30	4/4.4/25.5	179907 63/80/100	0.01
100×2	XXX	2	2.5	32	32	16	34	4/4.4/25.5	179907 63/80/100	0.02
125×2	XXX	2	2.5	40	38	22	42	5/4.4/31.5	179902 125	0.02
160×2	XXX	2	2.5	51	50	22	54	5/4.4/43.5	179902 160	0.02

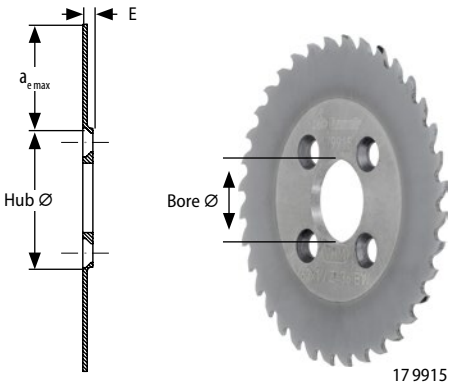
Solid carbide

GARANT solid carbide circular saw blade with extra narrow cutting width in order to minimise the loss of material. The cutting speed can be **increased by a factor of 3 to 4** compared to HSS saw blades.
Reinforced collar for a significant increase in the stability of the saw blade.
For flat base of the slot.

Note: The tolerances for the circular saw blade diameter are considerably better than the values permissible to DIN 1837/1838, in some cases by up to 50%.

Size 40×1 – Tooth profile B.

Size 50×1; 63×1; 63×1,5; 80×1,2; 80×1,5; 125×2 – Tooth profile BW.



17 9915

Ø×thickness	17C 17 9915 Circular saw blade TiAlN	Thickness	Collar thickness E	$a_{e\,max}$	Hub Ø	Bore Ø	No. of teeth Z	Drive holes number/Ø/pitch circle	suitable adapter	< 900 N f_z
mm		mm	mm	mm	mm	mm		mm		mm
40×1	XXX	1	2.4	6	24	8	28	3/4.4/17.5	179907 40/50	0.015
50×1	XXX	1	2.4	11	24	8	32	3/4.4/17.5	179907 40/50	0.015
50×2	XXX	2	2.4	11	24	8	28	3/4.4/17.5	179907 40/50	0.02
63×1	XXX	1	2.4	14	32	16	32	4/4.4/25.5	179907 63/80/100	0.015
63×1,5	XXX	1.5	2.4	14	32	16	28	4/4.4/25.5	179907 63/80/100	0.02
63×2	XXX	2	2.4	14	32	16	26	4/4.4/25.5	179907 63/80/100	0.025
80×1,2	XXX	1.2	2.4	22	32	16	44	4/4.4/25.5	179907 63/80/100	0.015
80×1,5	XXX	1.5	2.4	22	32	16	36	4/4.4/25.5	179907 63/80/100	0.02
80×2	XXX	2	2.4	22	32	16	34	4/4.4/25.5	179907 63/80/100	0.025
100×1,5	XXX	1.5	2.4	28	38	22	44	5/4.4/31.5	179902 125	0.02
100×2	XXX	2	2.4	28	38	22	42	5/4.4/31.5	179902 125	0.025
125×2	XXX	2	2.4	36	50	22	50	5/4.4/43.5	179902 160	0.025

Carbide

GARANT carbide-tipped circular saw blade for extra deep saw cuts. Unequal spacing of the saw blade teeth for smooth cutting. We recommend radial feed to minimise vibration and increase the working life of the saw blade.

17 9925 – Carbide substrate. Tooth form and number of teeth specially configured for machining aluminium.

17 9930 – Carbide substrate. Tooth form and number of teeth specially configured for machining steel. Very well suited even for steel < 1100 N/mm².

17 9925

17 9930

Ø×thickness	17C 17 9925	17C 17 9930 Circular saw blade	Thickness	$a_{e\,max}$	Bore Ø	No. of teeth Z 17 9925	No. of teeth Z 17 9930	Drive holes number/Ø/pitch circle	suitable adapter	Alu f_z	< 900 N f_z
mm			mm	mm	mm			mm		mm	mm
100×3	XXX	XXX	3	32	16	16	26	4/4.4/25.5	179907 63/80/100	0.02	0.02
125×3	XXX	XXX	3	42	22	16	26	5/4.4/31.5	179902 125	0.025	0.025
160×3	XXX	XXX	3	52	22	20	28	5/4.4/43.5	179902 160	0.03	0.03

Garant® Disposable saw blades

On request we can also supply **disposable saw blades** (carbide-tipped and/or coated) in the following versions:

250 × 2.0 × 1.75 × 32 × 60 Z	**285 × 2.0 × 1.75 × 32 × 80 Z**
250 × 2.0 × 1.75 × 32 × 80 Z	**360 × 2.6 × 2.25 × 40 × 60 Z**
285 × 2.0 × 1.75 × 32 × 60 Z	**360 × 2.6 × 2.25 × 40 × 100 Z**

Saw blades tipped with Cermet are also available on request.

HSS Co5 | DIN 841 | js16

Garant Shell end mill

The end mills cut on the front face and on the circumference.

Application:

18 1000 – **Type N** = standard toothing, 30° helix.

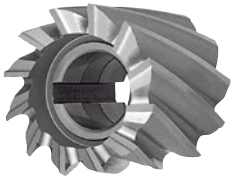
18 1100 – **Type H** = fine toothing, 20° helix.

Note: Sizes 30×30, 35×35, 40×20, 50×25, 60×60 can only be mounted using a bore keyway.
f_z for $a_p = 0.2 \times D$.

Type N 30°

18 1000

Type H 20°



18 1100

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	GG(G)	CuZn	Uni
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	K	N	
18 1000				**28**	**28**	22											60	○
18 1100					28	**22**	**22**									14	**60**	○

Ø×width js16	18 1000	18 1100	Bore Ø H7	No. of teeth Z		f_z < 750 N
	Shell end mill			18 1000	18 1100	
mm	N	H	mm			mm
30×30	XXX	(XXX)	13	6	10	0.055
35×35	XXX	XXX	16	6	10	0.055
40×20	XXX	XXX	16	6	10	0.055
40×40	XXX	XXX	16	6	10	0.055
50×25	XXX	(XXX)	22	8	12	0.07

Ø×width js16	18 1000	18 1100	Bore Ø H7	No. of teeth Z		f_z < 750 N
	Shell end mill			18 1000	18 1100	
mm	N	H	mm			mm
50×50	XXX	XXX	22	8	12	0.07
60×30	XXX	XXX	27	8	12	0.075
60×60	XXX	XXX	27	8	12	0.075
75×35	XXX	–	27	10	–	0.075
90×35	(XXX)	(XXX)	27	10	16	0.085

HSS Co5 | DIN 1880T1 | js16

Garant Shell end mill

The end mills cut on the front face and on the circumference.

Application:

18 1500 – **Type N** = standard toothing, 30° helix.

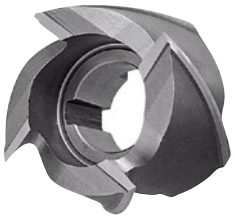
18 1700 – **Type W** = coarse toothing, 40° helix.

Note: f_z for $a_p = 0.2 \times D$.

Type N 30°

18 1500

Type W 40°



18 1700

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	Graphite GRP CRP	Uni
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	N	
18 1500				**28**	**28**	22												○
18 1700	**200**	**200**		**28**														

Ø×width js16	18 1500	18 1700	Bore Ø H7	No. of teeth Z		f_z < 750 N
	Shell end mill			18 1500	18 1700	
mm	N	W	mm			mm
40×32	XXX	XXX	16	6	3	0.055
50×36	XXX	XXX	22	8	3	0.07
63×40	XXX	XXX	27	8	4	0.075

Ø×width js16	18 1500	18 1700	Bore Ø H7	No. of teeth Z		f_z < 750 N
	Shell end mill			18 1500	18 1700	
mm	N	W	mm			mm
80×45	XXX	XXX	27	10	4	0.085
100×50	XXX	–	32	12	–	0.085

HSS Co5 | DIN 1880T1 | Type N | js16 | 30°

Garant Shell end mill

Cutting edge geometry for general use.
Eccentric relief ground.
With 30° helix and TiAlN coating.

Note: f_z for $a_p = 0.2 \times D$.

18 1750

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	CuZn	Uni
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	N	
18 1750				68	68	55	55							35	25	20	60	●

Ø×width js16	18 1750	Bore Ø H7	No. of teeth Z	f_z < 900 N
	Shell end mill			
	N			
mm	TiAlN	mm		mm
40×32	XXX	16	6	0.065
50×36	XXX	22	8	0.08
63×40	XXX	27	8	0.085
80×45	(XXX)	27	10	0.1

HSS Co5 | DIN 1880T1 | js16 | 27°

Garant Roughing / semi-roughing shell end mill

Relief ground profile.
Wide lands permit frequent regrinding without losing the profile.

Note: f_z for $a_p = 0.2 \times D$.

NR

18 2200

NF

18 2500

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	CuZn	Uni
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	N	
18 2200/2500				28	28	22								9			60	●

Ø×width js16	18 2200	18 2500	Bore Ø H7	No. of teeth Z	f_z < 750 N
	Roughing shell end mill	Semi-finishing shell end mill			
	NR	NF			
mm			mm		mm
40×32	XXX	XXX	16	6	0.055
50×36	XXX	XXX	22	6	0.07
50×50	–	XXX	22	6	0.07
60×30	–	XXX	27	8	0.075
63×40	XXX	XXX	27	8	0.075
80×45	XXX	XXX	27	8	0.085
100×50	XXX	(XXX)	32	10	0.085

HSS Co5 | DIN 1880T1 | js16 | 27°

Garant Roughing / semi-roughing shell end mill

Relief ground profile.

18 2220 – **Roughing end mill** with round knuckle profile.

18 2520 – **Semi-roughing end mill** with truncated knuckle profile.

Note: f_z for $a_p = 0.2 \times D$.

NR

18 2220

NF

18 2520

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	CuZn	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	N						
18 2220/2520					68	55	55							35	25		60	●		●			

Ø×width js16	18 2220	18 2520	Bore Ø H7	No. of teeth Z	< 900 N f_z
	Roughing shell end mill	Semi-roughing shell end mill			
	NR	NF			
mm	TiN	TiN	mm		mm
40×32	XXX	XXX	16	6	0.065
50×36	XXX	XXX	22	6	0.08
63×40	XXX	XXX	27	8	0.085
80×45	(XXX)	–	27	8	0.1
100×50	(XXX)	–	32	10	0.1

HSS Co5 | DIN 1880T1 | HR | js16 | 27°

Garant Roughing shell end mill

Eccentric relief ground fine knuckle-type profile.
Optimum cutting edge geometry.

Note: f_z for $a_p = 0.2 \times D$.

18 2750

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	CuZn	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	N						
18 2750					68	55	55	40						35	25	20	60	●		●			

Ø×width js16	18 2750	Bore Ø H7	No. of teeth Z	< 1100 N f_z
	Roughing shell end mill			
	HR			
mm	TiAlN	mm		mm
40×32	XXX	16	8	0.065
50×36	XXX	22	8	0.08
63×40	XXX	27	10	0.085
80×45	XXX	27	10	0.1
100×50	XXX	32	12	0.125

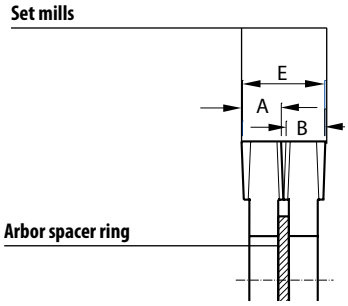
HSS Co5	DIN 885 A	Type N	±0.1	

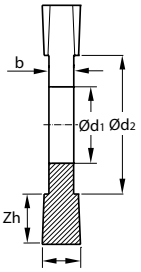
Garant Side milling cutter staggered teeth

Side milling cutter similar to DIN 885-A.
Pairs of milling cutters: Cutters with the same Ø and same number of teeth can be combined as a set and adjusted to the required width.
Since the cutters have no raised bore collar, the staggered teeth mesh with each other.
2-piece sets are particularly economical. By reversing the side milling cutters, both side edges of each cutter can be used.

Note:
- **Do not clamp the cutters in a set** without a sufficiently thick arbor spacer ring, otherwise the cutters will be damaged.
- See Group 30 for suitable arbor spacer rings.

Cutters are manufactured with external Ø to a tolerance ± 0.1 mm When using 2 cutters as a set and higher precision is required, the cutters must be ground as a set.
Slots milled from solid: f_z for $a_e = 0.1 \times D$.





18 5005

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	CuZn	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	N						
18 5005		200		19	19	19								9			180	●		●		○	●

Ø×width ±0.1×k11	18 5005 Side milling cutter	Bore Ø H6 d_1	No. of teeth Z	Collar thickness b ±0.1	Collar Ø d_2 ±1	Tooth height Zh	Capability of combining 2 cutters of the same width A/B	Capability of combining 2 cutters of the same width, results in overall width E	Capability of combining 2 cutters of different width A	Capability of combining 2 cutters of different width B	Capability of combining 2 cutters of different width, results in overall width E	< 900 N f_z
mm	HSS-Co5	mm		mm	mm	mm	mm	mm	mm	mm	mm	mm
63×3	XXX	22	18	2.5	40	11.5	3	5.7 – 5.8	3	4	6.6 – 6.8	0.05
63×4	XXX	22	18	2.8	40	11.5	4	7.7 – 7.8	–	–	–	0.05
63×5	XXX	22	14	3.5	40	11.5	5	9.1 – 9.8	5	6	9.6 – 10.8	0.05
63×6	XXX	22	14	4.2	40	11.5	6	11.1 – 11.8	6	8	12.6 – 13.8	0.05
63×8	XXX	22	14	5.2	40	11.5	8	14.5 – 15.8	8	10	16.5 – 17.8	0.05
63×10	XXX	22	14	7.2	40	11.5	10	18.5 – 19.8	–	–	–	0.05
80×2,5	XXX	27	22	1.8	50	15	2.5	4.5 – 4.8	–	–	–	0.06
80×3	XXX	27	22	1.9	50	15	3	5.5 – 5.8	3	4	6.6 – 6.8	0.06
80×4	XXX	27	22	2.3	50	15	4	7.3 – 7.8	4	5	8.1 – 8.8	0.06
80×5	XXX	27	22	3.1	50	15	5	9.2 – 9.8	–	–	–	0.06
80×6	XXX	27	18	3.5	50	15	6	10.7 – 11.8	6	8	13 – 13.8	0.06
80×8	XXX	27	18	5	50	15	8	14.5 – 15.8	6	10	14.7 – 15.8	0.06
80×10	XXX	27	18	7	50	15	10	18.5 – 19.8	8	10	16.6 – 17.8	0.06
80×12	XXX	27	14	8	50	15	12	22.5 – 23.8	12	14	23.5 – 25.8	0.06
80×14	XXX	27	14	8.5	50	15	14	25 – 27.8	14	16	27.5 – 29.8	0.06
100×3	XXX	27	22	1.9	60	20	3	5.7 – 7.8	–	–	–	0.06
100×4	XXX	27	22	2.3	60	20	4	7.3 – 7.8	4	5	8.1 – 8.8	0.06
100×5	XXX	27	22	3.1	60	20	5	9.2 – 9.8	5	6	9.8 – 10.8	0.06
100×6	XXX	27	22	3.5	60	20	6	10.6 – 11.8	–	–	–	0.06
100×8	XXX	27	18	5	60	20	8	14.5 – 15.8	8	10	16.6 – 17.8	0.06
100×10	XXX	27	18	7	60	20	10	18.8 – 19.8	8	12	18.3 – 19.8	0.06
100×12	XXX	27	18	8	60	20	12	21.8 – 23.8	–	–	–	0.06
100×14	XXX	27	14	8.5	60	20	14	25.5 – 27.8	–	–	–	0.06
100×16	XXX	27	14	11	60	20	16	29.5 – 31.8	–	–	–	0.06

Do you need gear cutters for your production?

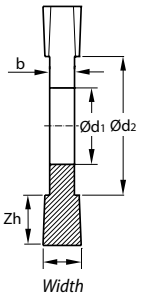
Ask your contact / technical adviser at the Hoffmann Group.
We will be happy to prepare a quotation for you.

Solid carbide	DIN 885 A	Type N	±0.1		HPC

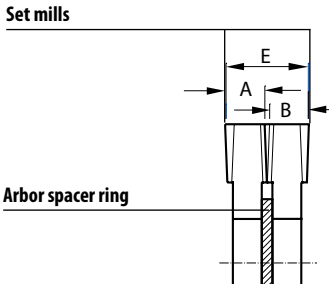
Garant Solid carbide HPC side milling cutter, staggered teeth

Precision solid carbide side milling cutters in the HPC machining range.
Use as a set: Cutters with the same Ø and same number of teeth can be combined as a set and adjusted to the required width. Since the cutters have no raised bore collar, the staggered teeth mesh with each other.
2-piece sets are particularly economical. By reversing the side milling cutters, both side edges of each cutter can be used.

Note:
- **Do not clamp the cutters in a set** without a sufficiently thick arbor spacer ring, otherwise the cutters will be damaged.
- See Group 30 for suitable arbor spacer rings.
- Slots milled from solid: f_z for $a_e = 0.1 \times D$.



18 5010



Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	CuZn					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	K	N					
18 5010	280	280	200	120	110	100	90	75						45			70	300		●	○		

∅×width ±0.1×k11	11V 18 5010 Side milling cutter Solid carbide HPC TiAlN	Bore ∅ H6 d_1	No. of teeth Z	Collar thickness b ±0.1	Collar ∅ d_2 ±1	Tooth height Zh	Capability of combining 2 cutters of the same width A/B	Capability of combining 2 cutters of the same width, results in overall width E	Capability of combining 2 cutters of different width A	Capability of combining 2 cutters of different width B	Capability of combining 2 cutters of different width, results in overall width E	< 900 N f_z
mm		mm		mm	mm	mm	mm	mm	mm	mm	mm	mm
40×3	XXX	13	12	1.9	28	6	3	5.7 – 5.8	3	4	6.6 – 6.8	0.03
40×4	XXX	13	12	2.8	28	6	4	7.7 – 7.8	–	–	–	0.03
40×5	XXX	13	12	3.2	28	6	5	9.1 – 9.8	5	6	10.1 – 10.8	0.03
40×6	XXX	13	12	4.2	28	6	6	11.1 – 11.8	6	8	12.6 – 13.8	0.03
40×8	XXX	13	12	5.2	28	6	8	14.5 – 15.8	8	10	16.5 – 17.8	0.03
40×10	XXX	13	12	7.2	28	6	10	18.5 – 19.8	–	–	–	0.03
50×3	XXX	16	14	1.9	34	8	3	5.7 – 5.8	3	4	6.6 – 6.8	0.04
50×4	XXX	16	14	2.8	34	8	4	7.7 – 7.8	4	5	8.1 – 8.8	0.04
50×5	XXX	16	14	3.2	34	8	5	9.1 – 9.8	5	6	10.1 – 10.8	0.04
50×6	XXX	16	14	4.2	34	8	6	11.1 – 11.8	6	8	12.6 – 13.8	0.04
50×8	XXX	16	14	5.2	34	8	8	14.5 – 15.8	8	10	16.5 – 17.8	0.04
50×10	XXX	16	14	7.2	34	8	10	18.5 – 19.8	–	–	–	0.04
63×3	XXX	22	18	1.9	40	11.5	3	5.7 – 5.8	3	4	6.6 – 6.8	0.05
63×4	XXX	22	18	2.8	40	11.5	4	7.7 – 7.8	–	–	–	0.05
63×5	XXX	22	14	3.2	40	11.5	5	9.1 – 9.8	5	6	10.1 – 10.8	0.06
63×6	XXX	22	14	4.2	40	11.5	6	11.1 – 11.8	6	8	12.6 – 13.8	0.06
63×8	XXX	22	14	5.2	40	11.5	8	14.5 – 15.8	8	10	16.5 – 17.8	0.06
63×10	XXX	22	14	7.2	40	11.5	10	18.5 – 19.8	–	–	–	0.06
80×3	XXX	27	22	1.9	50	15	3	5.5 – 5.8	–	–	–	0.045
80×4	XXX	27	22	2.3	50	15	4	7.3 – 7.8	4	5	8.1 – 8.8	0.045
80×5	XXX	27	22	3.1	50	15	5	9.2 – 9.8	–	–	–	0.045
80×6	XXX	27	18	3.5	50	15	6	10.7 – 11.8	6	8	13 – 13.8	0.05
80×8	XXX	27	18	5	50	15	8	14.5 – 15.8	6	10	14.7 – 15.8	0.05
80×10	XXX	27	18	7	50	15	10	18.5 – 19.8	8	10	16.6 – 17.8	0.05
80×12	XXX	27	14	8	50	15	12	21.6 – 23.8	12	14	23.5 – 25.8	0.06
80×14	XXX	27	14	8.5	50	15	14	25 – 27.8	–	–	–	0.06
100×4	XXX	27	22	2.3	60	20	4	7.3 – 7.8	4	5	8.1 – 8.8	0.045
100×5	XXX	27	22	3.1	60	20	5	9.2 – 9.8	5	6	9.8 – 10.8	0.045
100×6	XXX	27	22	3.5	60	20	6	10.6 – 11.8	–	–	–	0.045
100×8	XXX	27	18	5	60	20	8	14.5 – 15.8	8	10	16.6 – 17.8	0.045
100×10	XXX	27	18	7	60	20	10	18.8 – 19.8	8	12	18.3 – 19.8	0.045
100×12	XXX	27	18	8	60	20	12	21.8 – 23.8	10	14	22 – 23.8	0.045
100×14	XXX	27	18	9	60	20	14	25.5 – 27.8	12	14	23.7 – 25.8	0.045

HSS Co5 | Type N | js16

Garant Side milling cutter

DIN 1834 A | DIN 885 A

18 5500 – **Circular milling cutter, cutting on three faces,** with bore collar and keyway. The alternate helical tooth pattern ensures smooth cutting, even on deep cuts.

18 5820 – Staggered teeth with collar and keyway.

Application: For **slotting or cutting-off** when the side faces of the component must have an accurate and clean surface.

Note: f_z for $a_e = 0.1 \times D$.

18 5500

18 5820

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	CuZn	Uni
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	N	
18 5500/5820		200		19	19	19								9			180	○

Ø×width js16×k11	18 5500 Narrow side milling cutter	Bore Ø H7	No. of teeth Z	< 750 N f_z
mm	uncoated	mm		mm
50×1,6	XXX	16	22	0.04
50×2	XXX	16	22	0.04
50×2,5	XXX	16	22	0.04
50×3	XXX	16	22	0.04
50×3,5	XXX	16	22	0.04
50×4	XXX	16	22	0.04
50×5	XXX	16	22	0.04
63×1,6	XXX	22	28	0.05
63×2	XXX	22	28	0.05
63×2,5	XXX	22	28	0.05
63×3	XXX	22	28	0.05
63×3,5	XXX	22	28	0.05
63×4	XXX	22	28	0.05
63×5	XXX	22	28	0.05
80×1,6	XXX	27	32	0.06
80×2	XXX	27	32	0.06
80×2,5	XXX	27	32	0.06
80×3	XXX	27	32	0.06
80×3,5	XXX	27	32	0.06
80×4	XXX	27	32	0.06
80×5	XXX	27	32	0.06
80×6	XXX	27	32	0.06
100×1,6	XXX	32	36	0.06
100×2	XXX	32	36	0.06
100×2,5	XXX	32	36	0.06

Ø×width js16×k11	18 5500 Narrow side milling cutter	Bore Ø H7	No. of teeth Z	< 750 N f_z
mm	uncoated	mm		mm
100×3	XXX	32	36	0.06
100×3,5	XXX	32	36	0.06
100×4	XXX	32	36	0.06
100×5	XXX	32	36	0.06
100×6	XXX	32	36	0.06
100×8	XXX	32	28	0.06
125×2	XXX	32	40	0.09
125×2,5	XXX	32	40	0.09
125×3	XXX	32	40	0.09
125×3,5	XXX	32	40	0.09
125×4	XXX	32	40	0.09
125×5	XXX	32	40	0.09
125×6	XXX	32	40	0.09
125×8	XXX	32	32	0.09
125×10	XXX	32	32	0.09
160×2	XXX	40	48	0.11
160×2,5	XXX	40	48	0.11
160×3	XXX	40	48	0.11
160×3,5	XXX	40	48	0.11
160×4	XXX	40	48	0.11
160×5	XXX	40	48	0.11
160×6	XXX	40	48	0.11
160×8	XXX	40	36	0.11
160×10	XXX	40	36	0.11

Ø×width js16×k11	18 5820 Side milling cutter	Bore Ø H7	No. of teeth Z	< 750 N f_z
mm	uncoated	mm		mm
50×3	XXX	16	14	0.04
50×4	XXX	16	14	0.04
50×5	XXX	16	14	0.04
50×6	XXX	16	14	0.04
50×8	XXX	16	14	0.04
50×10	XXX	16	14	0.04
63×3	XXX	22	16	0.05
63×4	XXX	22	16	0.05
63×5	XXX	22	16	0.05
63×6	XXX	22	16	0.05
63×8	XXX	22	14	0.05
63×10	XXX	22	14	0.05
63×12	XXX	22	14	0.05
80×3	XXX	27	18	0.06
80×4	XXX	27	18	0.06
80×5	XXX	27	18	0.06
80×6	XXX	27	18	0.06
80×8	XXX	27	16	0.06
80×10	XXX	27	16	0.06

Ø×width js16×k11	18 5820 Side milling cutter	Bore Ø H7	No. of teeth Z	< 750 N f_z
mm	uncoated	mm		mm
80×12	XXX	27	16	0.06
100×3	XXX	32	22	0.06
100×4	XXX	32	22	0.06
100×5	XXX	32	22	0.06
100×6	XXX	32	22	0.06
100×8	XXX	32	18	0.06
100×10	XXX	32	18	0.06
100×12	XXX	32	18	0.06
125×4	XXX	32	24	0.09
125×5	XXX	32	24	0.09
125×6	XXX	32	24	0.09
125×8	XXX	32	20	0.09
125×10	XXX	32	20	0.09
125×12	XXX	32	20	0.09
160×6	XXX	40	26	0.11
160×8	XXX	40	26	0.11
160×10	XXX	40	22	0.11
160×12	XXX	40	22	0.11
160×14	XXX	40	22	0.11

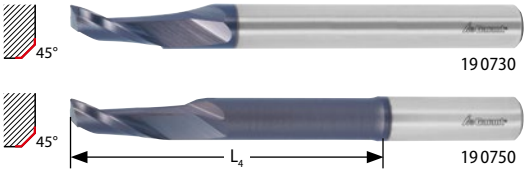
HSS Co5 | js14 | 1 | h6

Milling cutter for ELU machines

Special cutting edge geometry for aluminium and plastics.
Frontal and peripheral cutting with only one cutting edge.

19 0750 – With **neck recess.**
Size 5×100 special water drainage slot drill.

Application: **For milling slots on doors and windows of aluminium or plastic using high speed special milling machines (Elu, Haffner etc.).**



Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	CuZn	Graphite GRP CRP					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	N	N					
19 0730/0750	200	120	100	78													90				○	●	

∅×Length js14 D_c	11W 19 0730	11W 19 0750	L_s	L_4 19 0750	L_{tot}		45°
	Slot drill						
mm	TiAlN	TiAlN	mm	mm	mm	mm	mm
3×60	XXX	–	12	–	60	8	0.13
4×60	XXX	–	12	–	60	8	0.13
5×60	XXX	–	14	–	60	8	0.13
5×80	–	XXX	18	35	80	8	0.13
5×100	–	XXX	40	–	100	8	0.13

∅×Length js14 D_c	11W 19 0730	11W 19 0750	L_s	L_4 19 0750	L_{tot}		45°
	Slot drill						
mm	TiAlN	TiAlN	mm	mm	mm	mm	mm
6×60	XXX	–	16	–	60	8	0.13
8×80	XXX	XXX	14	54	80	8	0.23
8×120	XXX	–	14	–	120	8	0.23
10×80	XXX	–	14	–	80	8	0.13

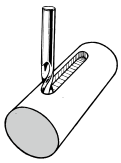
DIN 327 D | Type N | e8 | 2 | 30° | h6 DIN 1835 B

Slot drill (keyway cutter)

Centre cutting edge geometry for plunging.

19 1050 – For very high demands on the metal removal rate.
19 1070 – Economy version.

Application: For milling **keyways** (slots) or pockets from the centre of the component.



HSS Co8 | 90° | 19 1000
HSS PM | 90° | 19 1050
HSS Co8 | 90° | 19 1070

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	GG(G)	CuZn	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	K	N						
19 1000		83	37	28	23	23										23	55	●		●			
19 1050		138	110	83	64	64	37	32						23	18	55	110	●		●		●	
19 1070				78	55	55								17	14	46	92	●		●		●	

∅ e8 D_c	11W 19 1000	11W 19 1050	12W 19 1070	L_s	L_{tot}		< 750 N f_z
	Garant		HOLEX				
	Slot drill						
	HSS-Co8	HSS-PM TiAlN	HSS-Co8 TiAlN				
mm				mm	mm	mm	mm
1	XXX	–	–	2.5	47	6	0.005
1,5	XXX	–	–	3	47	6	0.005
2	XXX	XXX	XXX	4	48	6	0.006
2,5	XXX	XXX	XXX	5	49	6	0.006
2,8	XXX	XXX	XXX	5	49	6	0.006
3	XXX	XXX	XXX	5	49	6	0.007
3,5	XXX	XXX	XXX	6	50	6	0.007
3,8	XXX	XXX	XXX	7	51	6	0.007
4	XXX	XXX	XXX	7	51	6	0.009
4,5	XXX	XXX	XXX	7	51	6	0.009
4,8	XXX	XXX	XXX	8	52	6	0.009
5	XXX	XXX	XXX	8	52	6	0.012
5,5	XXX	XXX	XXX	8	52	6	0.012
5,75	XXX	XXX	XXX	8	52	6	0.012
6	XXX	XXX	XXX	8	52	6	0.014
6,5	XXX	XXX	XXX	10	60	10	0.014
6,75	XXX	–	–	10	60	10	0.014
7	XXX	XXX	XXX	10	60	10	0.016
7,5	XXX	XXX	XXX	10	60	10	0.016
7,75	XXX	XXX	XXX	11	61	10	0.016
8	XXX	XXX	XXX	11	61	10	0.02
8,5	XXX	XXX	XXX	11	61	10	0.02
8,7	XXX	–	–	11	61	10	0.02
9	XXX	XXX	XXX	11	61	10	0.024
9,5	XXX	–	–	11	61	10	0.024
9,7	XXX	XXX	XXX	13	63	10	0.024
10	XXX	XXX	XXX	13	63	10	0.03
10,5	XXX	XXX	XXX	13	63	12	0.03

∅ e8 D_c	11W 19 1000	11W 19 1050	12W 19 1070	L_s	L_{tot}		< 750 N f_z
	Garant		HOLEX				
	Slot drill						
	HSS-Co8	HSS-PM TiAlN	HSS-Co8 TiAlN				
mm				mm	mm	mm	mm
11	XXX	XXX	XXX	13	70	12	0.032
11,7	XXX	–	XXX	13	70	12	0.032
12	XXX	XXX	XXX	16	73	12	0.035
12,7	XXX	–	–	16	73	12	0.035
13	XXX	XXX	XXX	16	73	12	0.038
13,7	XXX	–	–	16	73	12	0.038
14	XXX	XXX	XXX	16	73	12	0.042
14,5	XXX	–	–	16	73	12	0.042
15	XXX	XXX	XXX	16	73	12	0.045
15,7	XXX	–	–	19	79	16	0.045
16	XXX	XXX	XXX	19	79	16	0.048
16,5	XXX	–	–	19	79	16	0.048
17	XXX	XXX	XXX	19	79	16	0.051
17,7	XXX	–	–	19	79	16	0.051
18	XXX	XXX	XXX	19	79	16	0.054
19	XXX	–	–	19	79	20	0.057
19,7	XXX	–	–	22	88	20	0.057
20	XXX	XXX	XXX	22	88	20	0.06
21,7	XXX	–	–	22	88	20	0.062
22	XXX	–	–	22	88	20	0.062
24	XXX	–	–	26	102	25	0.065
25	XXX	–	–	26	102	25	0.065
26	XXX	–	–	26	102	25	0.065
28	XXX	–	–	26	102	25	0.068
30	XXX	–	–	26	102	25	0.068
32	XXX	–	–	32	112	32	0.068
36	XXX	–	–	32	112	32	0.072
40	XXX	–	–	38	130	32	0.072

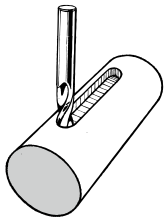
HSS Co8 | DIN 844 B | Type N | e8 | 2 | 30° | h6 DIN 1835 B

Garant Slot drill (keyway cutter)

Dimensions to **DIN 844 long.**
Cutting length to **DIN 844 short.**
Centre cutting edge geometry for plunging.

Application: For milling **keyways** (slots) or pockets from the centre of the component.

19 1080



Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	CuZn
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	K	N
19 1080		83		**28**	**25**	23											23	55

Ø e8 D_c	11W	19 1080 Slot drill	L_s	L_{tot}		< 750 N f_z
mm			mm	mm	mm	mm
2		XXX	7	54	6	0.006
2,5		XXX	8	56	6	0.006
3		XXX	8	56	6	0.007
3,5		XXX	10	59	6	0.007
4		XXX	11	63	6	0.008
4,5		XXX	11	63	6	0.008
5		XXX	13	68	6	0.01
5,5		XXX	13	68	6	0.01
6		XXX	13	68	6	0.012
6,5		XXX	16	80	10	0.012
7		XXX	16	80	10	0.016
7,5		XXX	16	80	10	0.016
8		XXX	19	88	10	0.018
8,5		XXX	19	88	10	0.018
9		XXX	19	88	10	0.022
9,5		XXX	19	88	10	0.022
10		XXX	22	95	10	0.028
11		XXX	22	102	12	0.028
12		XXX	26	110	12	0.034
13		XXX	26	110	12	0.036
14		XXX	26	110	12	0.038
15		XXX	26	110	12	0.042
16		XXX	32	123	16	0.042
17		XXX	32	123	16	0.046
18		XXX	32	123	16	0.046
19		XXX	38	141	20	0.05
20		XXX	38	141	20	0.054
22		XXX	38	141	20	0.054
30		XXX	45	166	25	0.06

HSS Co8 | DIN 844 B | Type W | e8 | 2 | 42° | h6 DIN 1835 B

Garant® Milling cutter

Centre cutting edge geometry for plunging. Wide, fine ground chip flutes. Exceptionally fine component surface finish - due to precisely ground cutting edges. For slots or for milling pockets from the component centre.

90°

19 1100

Note: **Note!** Only for use in climb milling.

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	Graphite GRP CRP	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	N						
19 1100		150	37	28															●	●			

Ø e8 D_c	11W 19 1100 Slot drill	L_s	L_{tot}		Alu f_z
mm		mm	mm	mm	mm
2	XXX	7	51	6	0.006
2,5	XXX	8	52	6	0.006
3	XXX	8	52	6	0.008
3,5	XXX	10	54	6	0.008
4	XXX	11	55	6	0.012
4,5	XXX	11	55	6	0.012
5	XXX	13	57	6	0.015
5,5	XXX	13	57	6	0.015
6	XXX	13	57	6	0.018
6,5	XXX	16	66	10	0.018

Ø e8 D_c	11W 19 1100 Slot drill	L_s	L_{tot}		Alu f_z
mm		mm	mm	mm	mm
7	XXX	16	66	10	0.018
8	XXX	19	69	10	0.024
8,5	XXX	19	69	10	0.024
9	XXX	19	69	10	0.024
10	XXX	22	72	10	0.029
12	XXX	26	83	12	0.041
14	XXX	26	83	12	0.041
16	XXX	32	92	16	0.046
18	XXX	32	92	16	0.046
20	XXX	38	104	20	0.055

DIN 844 B | Type N | e8 | 3 | 30° | h6 DIN 1835 B

Milling cutter

Centre cutting teeth for plunging.
Eccentric relief ground.

19 1250 – For very high demands on the metal removal rate.
19 1260 – Economy version.

Note: **Suitable for use as a slot drill** (tolerance e8) **or an end mill.**
50 % higher metal removal rate than 2 flute slot drills.
Larger flutes than multi-flute end mills (good for soft material). For milling keyways.

HSS Co8 | 90° | 19 1200

HSS PM | 90° | 19 1250

HSS Co8 | 90° | 19 1260

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	GG(G)	CuZn	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	K	N						
19 1200		83		30	25	23										23	55	●		●			
19 1250		138	110	83	64	64	37	32						25	18	55	110	●		●		●	
19 1260		120		78	55	55								17		46	92	●		●		○	

Ø e8 D_c	11W 19 1200 Garant®	11W 19 1250 Garant®	12W 19 1260 HOLEX® Slot drills	L_s	L_{tot}		< 750 N f_z
	HSS-Co8	HSS-PM TiAlN	HSS-Co8 TiAlN				
mm				mm	mm	mm	mm
1,5	XXX	–	–	7	51	6	0.002
2	XXX	XXX	XXX	7	51	6	0.003
2,5	XXX	XXX	XXX	8	52	6	0.003
3	XXX	XXX	XXX	8	52	6	0.004
3,5	XXX	XXX	XXX	10	54	6	0.004
4	XXX	XXX	XXX	11	55	6	0.007
4,5	XXX	XXX	XXX	11	55	6	0.007
5	XXX	XXX	XXX	13	57	6	0.008
5,5	XXX	XXX	XXX	13	57	6	0.008
6	XXX	XXX	XXX	13	57	6	0.01
6,5	XXX	XXX	XXX	16	66	10	0.01
7	XXX	XXX	XXX	16	66	10	0.013
7,5	XXX	–	–	16	66	10	0.013
8	XXX	XXX	XXX	19	69	10	0.016
8,5	XXX	XXX	XXX	19	69	10	0.016
9	XXX	XXX	XXX	19	69	10	0.018

Ø e8 D_c	11W 19 1200 Garant®	11W 19 1250 Garant®	12W 19 1260 HOLEX® Slot drills	L_s	L_{tot}		< 750 N f_z
	HSS-Co8	HSS-PM TiAlN	HSS-Co8 TiAlN				
mm				mm	mm	mm	mm
9,5	XXX	–	–	19	69	10	0.018
10	XXX	XXX	XXX	22	72	10	0.02
11	XXX	XXX	XXX	22	79	12	0.02
12	XXX	XXX	XXX	26	83	12	0.024
13	XXX	XXX	XXX	26	83	12	0.024
14	XXX	XXX	XXX	26	83	12	0.024
15	XXX	XXX	XXX	26	83	12	0.024
16	XXX	XXX	XXX	32	92	16	0.03
18	XXX	XXX	XXX	32	92	16	0.03
20	XXX	XXX	XXX	38	104	20	0.035
22	XXX	–	–	38	104	20	0.035
24	XXX	–	XXX	45	121	25	0.04
25	XXX	XXX	XXX	45	121	25	0.04
26	XXX	–	–	45	121	25	0.044
28	XXX	–	–	45	121	25	0.044
30	XXX	–	–	45	121	25	0.048

DIN 844 B | Type N | e8 | 3 | 30° | h6 DIN 1835 B

HSS Co8

Garant Milling cutter

Centre cutting teeth for plunging.
Eccentric relief ground.

19 1290 – For the most demanding metal removal rates.

Note: **Suitable for use as a slot drill** (tolerance e8) **or an end mill.**
50 % higher metal removal rate than 2 flute slot drills.
Larger flutes than multi-flute end mills (good for soft material). For milling keyways.

191280

HSS PM

191290

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	GG(G)	CuZn	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	K	N						
19 1280		83		**28**	**25**	23										23	55	●		●			
19 1290		138	110	**83**	**64**	**64**	**37**	32						**23**	18	55	110	●		●		●	

Ø e8 D_c	11W 19 1280	11W 19 1290	L_s	L_{tot}		< 750 N f_z
	Slot drills					
	HSS-Co8	HSS-PM TiAlN				
mm			mm	mm	mm	mm
3	XXX	XXX	12	56	6	0.003
3,5	XXX	–	15	59	6	0.005
4	XXX	XXX	19	63	6	0.005
4,5	XXX	–	19	63	6	0.005
5	XXX	XXX	24	68	6	0.008
5,5	XXX	–	24	68	6	0.008
6	XXX	XXX	24	68	6	0.011
8	XXX	XXX	38	88	10	0.015
10	XXX	XXX	45	95	10	0.018

Ø e8 D_c	11W 19 1280	11W 19 1290	L_s	L_{tot}		< 750 N f_z
	Slot drills					
	HSS-Co8	HSS-PM TiAlN				
mm			mm	mm	mm	mm
12	XXX	XXX	53	110	12	0.024
14	XXX	XXX	53	110	12	0.024
16	XXX	XXX	63	123	16	0.03
18	XXX	–	63	123	16	0.033
20	XXX	XXX	75	141	20	0.04
22	XXX	–	75	141	20	0.04
25	XXX	–	90	166	25	0.045
30	XXX	–	90	166	25	0.05

HSS Co8 | DIN 844 B | Type W | e8 | 3 | 42° | h6 DIN 1835 B

Garant Milling cutter

Centre cutting teeth for plunging.
Eccentric relief ground.

- Wide, precision ground chip flutes.
- Extremely fine workpiece surfaces due to precisely ground cutting edges.
- Special rake angle for aluminium.

Note: For milling keyways.

19 1320

19 1340

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	Graphite GRP CRP	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	N						
19 1320/1340		**150**	37	**28**																●	●		

Ø e8 D_c	11W 19 1320	11W 19 1340	L_s		L_{tot}			Alu f_z
	Slot drills							
			19 1320	19 1340	19 1320	19 1340		
mm			mm	mm	mm	mm	mm	mm
3	XXX	–	8	–	52	–	6	0.008
4	XXX	–	11	–	55	–	6	0.012
5	XXX	–	13	–	57	–	6	0.015
6	XXX	XXX	13	24	57	68	6	0.018
7	XXX	–	16	–	66	–	10	0.02
8	XXX	XXX	19	38	69	88	10	0.024
9	XXX	–	19	–	69	–	10	0.026
10	XXX	XXX	22	45	72	95	10	0.029
11	XXX	–	22	–	79	–	12	0.029
12	XXX	XXX	26	53	83	110	12	0.041
14	XXX	XXX	26	53	83	110	12	0.041
15	XXX	–	26	–	83	–	12	0.041
16	XXX	XXX	32	63	92	123	16	0.046
20	XXX	XXX	38	75	104	141	20	0.055
22	XXX	XXX	38	75	104	141	20	0.058
25	XXX	XXX	45	90	121	166	25	0.065
30	XXX	XXX	45	90	121	166	25	0.07

Standard | Type N | e8 | 3

HOLEX Minimill

Centre cutting teeth for plunging.
Eccentric relief ground. Shank similar to DIN 1835 B with shank tolerance h6. General-purpose cutting edge geometry. For use as **slot drill or end mill** in side lock arbors and collet chucks. **High cutting performance,** very competitive price. For milling keyways.

19 1380 – For the most demanding metal removal rates.

Note: Save the regrinding costs: it is cheaper to use a mini slot drill to the limit of wear and throw it away, than to regrind it.

HSS Co8 | 90°

19 1360

HSS PM | 90°

19 1380

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	CuZn	Uni				
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	N					
19 1360		83		**30**	**25**	**25**											55		●			
19 1380		138	110	**83**	**64**	**64**	**37**	32						**23**	18		110	●	●		●	

Ø e8 D_c	12W 19 1360	12W 19 1380	L_s	L_{tot}		< 750 N f_z
	Mini slot drill					
	HSS-Co8	HSS-PM TiAlN				
mm			mm	mm	mm	mm
1	XXX	–	3	34	6	0.002
1,5	XXX	XXX	3	34	6	0.002
1,8	XXX	–	3	34	6	0.002
2	XXX	XXX	4	35	6	0.003
2,3	XXX	–	4	36	6	0.003
2,5	XXX	XXX	5	36	6	0.003
2,8	XXX	XXX	5	36	6	0.003
3	XXX	XXX	5	36	6	0.003
3,3	XXX	–	5	36	6	0.003
3,5	XXX	XXX	6	37	6	0.003
3,8	XXX	XXX	7	38	6	0.003
4	XXX	XXX	7	38	6	0.005
4,3	XXX	–	7	38	6	0.005
4,5	XXX	XXX	7	38	6	0.005
4,8	XXX	XXX	8	39	6	0.005

Ø e8 D_c	12W 19 1360	12W 19 1380	L_s	L_{tot}		< 750 N f_z
	Mini slot drill					
	HSS-Co8	HSS-PM TiAlN				
mm			mm	mm	mm	mm
5	XXX	XXX	8	39	6	0.008
5,5	XXX	XXX	8	39	6	0.008
5,75	XXX	XXX	8	39	6	0.008
6	XXX	XXX	8	39	6	0.011
6,5	–	XXX	10	42	8	0.011
7	XXX	XXX	10	42	8	0.014
7,5	XXX	XXX	10	42	8	0.014
8	XXX	XXX	11	43	8	0.018
9	–	XXX	11	48	10	0.018
9,5	–	XXX	11	48	10	0.018
10	XXX	XXX	13	50	10	0.025
12	XXX	XXX	16	58	12	0.04
16	XXX	XXX	19	64	16	0.05
20	XXX	XXX	22	78	20	0.06

Standard | Type N | e8 | 3

HOLEX Minimill

Centre cutting teeth for plunging.
Eccentric relief ground. General-purpose cutting edge geometry. Shank similar to DIN 1835 B with shank tolerance h6. For use as **slot drill or end mill** in side lock arbors and collet chucks. **High cutting performance,** very competitive price. For milling keyways.

19 1420 – For the most demanding metal removal rates.

Note: Save the regrinding costs: it is cheaper to use a mini slot drill to the limit of wear and throw it away, than to regrind it.

HSS Co8 | 90°

19 1400

HSS PM | 90°

19 1420

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	CuZn	Uni				
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	N					
19 1400		83		**30**	**25**	**25**											55		●			
19 1420		138	110	**83**	**64**	**64**	**37**	32						**23**	18		110	●	●		●	

Ø e8 D_c	12W 19 1400	12W 19 1420	L_s	L_{tot}		< 750 N f_z
	Mini slot drill					
	HSS-Co8	HSS-PM TiAlN				
mm			mm	mm	mm	mm
2	XXX	XXX	7	38	6	0.003
2,5	XXX	XXX	8	39	6	0.003
3	XXX	XXX	8	39	6	0.003
3,5	XXX	XXX	10	41	6	0.003
4	XXX	XXX	11	42	6	0.005
4,5	XXX	XXX	11	42	6	0.005
5	XXX	XXX	13	44	6	0.008
5,5	XXX	XXX	13	44	6	0.008

Ø e8 D_c	12W 19 1400	12W 19 1420	L_s	L_{tot}		< 750 N f_z
	Mini slot drill					
	HSS-Co8	HSS-PM TiAlN				
mm			mm	mm	mm	mm
6	XXX	XXX	13	44	6	0.01
6,5	–	XXX	16	48	8	0.01
7	XXX	XXX	16	48	8	0.012
7,5	–	XXX	16	48	8	0.012
8	XXX	XXX	19	51	8	0.016
8,5	–	XXX	19	56	10	0.016
9	XXX	XXX	19	56	10	0.018
10	XXX	XXX	22	59	10	0.024

DIN 844 B | Type N | k10 | 30-40° | h6 DIN 1835 B

4 | 6

Milling cutter

Multi-flute end mill. **Eccentric relief ground.**

19 1500 – Centre cutting edge geometry for plunging.

19 1520 – For the highest demands in respect to material removal rates. **Excellent results** when **milling dry.** Size 6M–25M **MID mills:** Dimensions to **manufacturer's standard,** which lies **between** DIN 844 **short** and DIN 844 **long**. **Particularly suitable** for **mould** and **tool making**, as the **medium length** provides higher **rigidity** than long series mills to DIN 844.

19 1590 – Economy version.

HSS Co8 | 90°

19 1500

HSS PM | 90°

19 1520

HSS PM | 90°

MID end mill 19 1520

HSS Co8 | 90°

19 1590

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	GG(G)	CuZn	Uni
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	K	N	
19 1500		83		**30**	**25**	25										23	55	●
19 1520		138	110	**83**	**64**	**64**	**37**	32						**23**	18	55	110	●
19 1590		120		**78**	**55**	**55**								**17**	14	46	92	●

Ø k10 D_c	11W 19 1500 Garant End mills HSS-Co8	11W 19 1520 Garant End mills HSS-PM TiAlN	12W 19 1590 HOLEX End mills HSS-Co8 TiAlN	No. of teeth Z 19 1500	19 1520	19 1590	L_s	L_{tot}		< 750 N f_z
mm							mm	mm	mm	mm
2	XXX	–	–	4	–	–	7	51	6	0.003
2,5	XXX	–	–	4	–	–	8	52	6	0.003
3	XXX	XXX	XXX	4	4	4	8	52	6	0.005
3,5	XXX	–	–	4	–	–	10	54	6	0.005
4	XXX	XXX	XXX	4	4	4	11	55	6	0.008
4,5	XXX	–	–	4	–	–	11	55	6	0.008
5	XXX	XXX	XXX	4	4	4	13	57	6	0.01
5,5	XXX	–	–	4	–	–	13	57	6	0.01
6	XXX	XXX	XXX	4	4	4	13	57	6	0.014
6M	–	XXX	–	–	4	–	19	63	6	0.014
6,5	XXX	–	–	4	–	–	16	66	10	0.014
7	XXX	XXX	XXX	4	4	4	16	66	10	0.014
7,5	XXX	–	–	4	–	–	16	66	10	0.014
8	XXX	XXX	XXX	4	4	4	19	69	10	0.02
8M	–	XXX	–	–	4	–	28	78	10	0.02
8,5	XXX	–	–	4	–	–	19	69	10	0.02
9	XXX	XXX	XXX	4	4	4	19	69	10	0.02
10	XXX	XXX	XXX	4	4	4	22	72	10	0.023
10M	–	XXX	–	–	4	–	35	84	10	0.023
10,5	XXX	–	–	4	–	–	22	79	12	0.023
11	XXX	–	–	4	–	–	22	79	12	0.025
11,5	XXX	–	–	4	–	–	22	79	12	0.025
12	XXX	XXX	XXX	4	4	4	26	83	12	0.028
12M	–	XXX	–	–	4	–	40	97	12	0.028
13	XXX	XXX	XXX	4	4	4	26	83	12	0.028
14	XXX	XXX	XXX	4	4	4	26	83	12	0.028
15	XXX	XXX	XXX	4	4	4	26	83	12	0.028
16	XXX	XXX	XXX	4	6	4	32	92	16	0.034
16M	–	XXX	–	–	6	–	48	108	16	0.034
18	XXX	XXX	XXX	4	6	4	32	92	16	0.034
20	XXX	XXX	XXX	4	6	4	38	104	20	0.039
20M	–	XXX	–	–	6	–	58	122	20	0.039
22	XXX	XXX	XXX	4	6	4	38	104	20	0.042
24	XXX	–	–	4	–	–	45	121	25	0.042
25	XXX	XXX	XXX	4	6	6	45	121	25	0.046
25M	–	XXX	–	–	6	–	68	144	25	0.046
26	XXX	–	–	6	–	–	45	121	25	0.046
28	XXX	–	–	6	–	–	45	121	25	0.05
30	XXX	–	–	6	–	–	45	121	25	0.05
32	XXX	–	–	6	–	–	53	133	32	0.05
35	XXX	–	–	6	–	–	53	133	32	0.056
40	XXX	–	–	6	–	–	63	155	32	0.06

HSS Co8 | DIN 844 B | Type N | k10 | 30° | h6 DIN 1835 B

5 6 7

Garant Milling cutter

Multi-flute end mill. End face recessed.
Eccentric relief ground.

19 1530

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	GG(G)	CuZn	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	K	N						
19 1530		83		**30**	**25**	25										23	55	●		●			

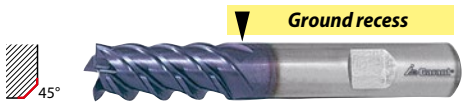
Ø k10 D_C mm	11W 19 1530 End mill	No. of teeth Z	L_s mm	L_{tot} mm	mm	< 750 N f_z mm
5	XXX	5	24	68	6	0.008
6	XXX	5	24	68	6	0.012
7	XXX	5	30	80	10	0.012
8	XXX	5	38	88	10	0.018
9	XXX	5	38	88	10	0.018
10	XXX	5	45	95	10	0.03
11	XXX	5	45	102	12	0.03
12	XXX	5	53	110	12	0.04
14	XXX	5	53	110	12	0.04

Ø k10 D_C mm	11W 19 1530 End mill	No. of teeth Z	L_s mm	L_{tot} mm	mm	< 750 N f_z mm
16	XXX	6	63	123	16	0.045
18	XXX	6	63	123	16	0.045
20	XXX	6	75	141	20	0.048
22	XXX	6	75	141	20	0.048
25	XXX	6	90	166	25	0.05
30	XXX	7	90	166	25	0.055
32	XXX	7	106	186	32	0.055
40	XXX	7	125	217	32	0.06

HSS PM | DIN 844 B | Type N | k10 | 4 | 50° | h6 DIN 1835 B

Garant Milling cutter

Multi-flute end mill, for highest metal removal rate demands. Centre cutting edge geometry for plunging.
Eccentric relief ground. For peripheral milling as a finishing operation, **producing very high surface finish quality.**
Advantage: **Excellent results** when **milling dry.**



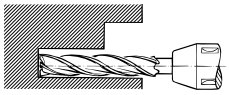
19 1581

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	GG(G)	CuZn	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	K	N						
19 1581		138	110	**83**	**64**	**64**	**37**	32						**23**	18	55	110	●		●		●	●

Ø k10 D_C mm	11W 19 1581 End mill HSS-PM TiAlN	L_s mm	L_4 mm	Ø D_4 mm	L_{tot} mm	mm	45° mm	< 750 N f_z mm
6	XXX	13	21	5.7	57	6	0.2	0.016
8	XXX	19	–	–	69	10	0.2	0.024
10	XXX	22	32	9.7	72	10	0.2	0.038
12	XXX	26	38	11.5	83	12	0.25	0.058
14	XXX	26	–	–	83	12	0.25	0.058

Ø k10 D_C mm	11W 19 1581 End mill HSS-PM TiAlN	L_s mm	L_4 mm	Ø D_4 mm	L_{tot} mm	mm	45° mm	< 750 N f_z mm
16	XXX	32	44	15.5	92	16	0.25	0.066
18	XXX	32	–	–	92	16	0.3	0.066
20	XXX	38	54	19.5	104	20	0.3	0.076
25	XXX	45	65	24	121	25	0.3	0.076

HSS Co8 | Type N | k10 | 5 | 30° | h6 DIN 1835 B



Garant Milling cutter

Multi-flute end mill. End face recessed.
Advantage: Particularly for machining at recessed or difficult to access places or for milling deep opened ended pockets in one operation.

19 1620

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	GG(G)	CuZn	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	K	N						
19 1620		83		**28**	**23**	23										23	55	●		●			

Ø k10 D_C mm	11W 19 1620 End mill	L_s mm	L_{tot} mm	mm	< 750 N f_z mm
6	XXX	56	100	6	0.01
8	XXX	63	106	10	0.02
10	XXX	70	112	10	0.03
12	XXX	75	125	12	0.035

Ø k10 D_C mm	11W 19 1620 End mill	L_s mm	L_{tot} mm	mm	< 750 N f_z mm
14	XXX	75	125	12	0.038
16	XXX	85	140	16	0.04
18	XXX	100	160	16	0.04
20	XXX	110	180	20	0.045

HSS Co5 | Type N | k10 | 30° | h6 DIN 1835 B

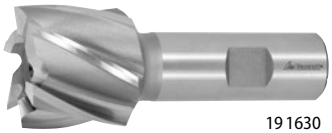
6 | 8

Garant Milling cutter

Multi-flute end mill. End face recessed.

Advantage: For milling at low cutting depths (predominantly face milling).
Very reliable cutter, due to low load on the machine spindle.

90°



19 1630

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	GG(G)	CuZn	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	K	N						
19 1630		83		28	23	23										23	55	●		●			

Ø k10 D_c mm	11W 19 1630 End mill	No. of teeth Z	L_s mm	L_{tot} mm	mm	< 750 N f_z mm
30	XXX	6	30	90	20	0.08
35	XXX	6	30	90	20	0.08
40	XXX	6	32	95	25	0.1
50	XXX	8	36	100	32	0.12

HSS E-SPM | DIN 327 | Type N | k10 | 25° | ≠ | a_e 0.5×D | h6 DIN 1835 B | HPC

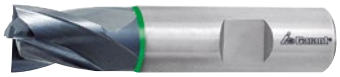
Garant Universal HPC milling cutter

Special **SPM** substrate with very high cobalt content.
Combines the **hardness of solid carbide** and the **toughness of PM steel.**
Dimensions to DIN 327.

Advantage: This end mill can be used on a wide range of materials due to the universal geometry.

4 | 6

90°



19 1632

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	GG(G)	CuZn	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	K	N						
19 1632		159	125	95	74	74	42	32						26	21	63	125	●		●		●	●

Ø k10 D_c mm	11W 19 1632 End mill HSS-E-SPM HPC TiAlN	No. of teeth Z	L_s mm	L_{tot} mm	mm	< 1100 N f_z mm
6	XXX	4	8	52	6	0.008
8	XXX	4	11	61	10	0.012
10	XXX	4	13	63	10	0.019
12	XXX	4	16	73	12	0.026
14	XXX	4	16	73	12	0.03
16	XXX	4	19	79	16	0.033
18	XXX	4	19	79	16	0.038
20	XXX	4	22	88	20	0.042
22	XXX	4	22	88	20	0.044
25	XXX	4	26	102	25	0.048
32	XXX	6	32	112	32	0.056

HSS E-SPM | DIN 844 B | Type N | 0 –0.03 | 4 | 38° | ≠ | ≠ | a_e 0.3×D | h6 DIN 1835 B | HPC

HOLEX Milling cutter set HPC

For roughing and finishing, multi-tooth with general purpose geometry.
One each end mill No. 191637 Ø 6; 8; 10; 12 and 16 mm.

Supplied with: 5 pieces.

Note: For cutting data recommendations see item 191637.

R

19 1639_Set

Type			SET
12W 19 1639	End mill SET HSS-E-SPM	TiAlN	XXX

HSS E-SPM | DIN 844 B | Type N | 4 | ≠ | a_e 0.5×D | h6 DIN 1835 B | HPC | k12 | 30°

Universal HPC milling cutter

19 1635 – Special **SPM** substrate with very high cobalt content.
Combines the **hardness of solid carbide** and the **toughness of PM steel.**
Multi-flute end mill with universal geometry.
Can be used as a finishing end mill, semi-roughing or roughing end mill.

19 1637 – Very high-performance substrate for machining steel and stainless steel materials.

90°

19 1635

0 −0.03 | 38° | ≠

45°

19 1637

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	GG(G)	CuZn	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	K	N						
19 1635		159	125	95	74	74	42	32						26	21	63	125	●		●		●	●
19 1637					74	64	42	32						26	21			●		●		●	●

Ø D_c	11W 19 1635	12W 19 1637	L_s	L_{tot}		< 1100 N f_z	
	Garant	HOLEX					
	End mill						
	HSS-E-SPM HPC		19 1635	19 1637		19 1635	19 1637
mm	TiAlN	TiAlN	mm	mm	mm	mm	mm	mm
3	XXX	XXX	8	8	52	6	6	0.008
3,5	XXX	–	10	–	54	6	–	0.008
4	XXX	XXX	11	11	55	6	6	0.012
4,5	XXX	–	11	–	55	6	–	0.012
5	XXX	XXX	13	13	57	6	6	0.012
6	XXX	XXX	13	13	57	6	6	0.016
7	XXX	–	16	–	66	10	–	0.016
8	XXX	XXX	19	19	69	10	8	0.024
9	XXX	–	19	–	69	10	–	0.024
10	XXX	XXX	22	22	72	10	10	0.038
12	XXX	XXX	26	26	83	12	12	0.052
14	XXX	XXX	27	26	83	12	12	0.06
16	XXX	XXX	32	32	92	16	16	0.066
18	XXX	XXX	32	32	92	16	16	0.07
20	XXX	XXX	38	38	104	20	20	0.075
25	XXX	XXX	45	45	121	25	25	0.08

HSS Co8 | DIN 844 B | NF | k10 | 3 | 25° | h6 DIN 1835 B

Garant

Semi-roughing end mill

Universal end mill with relief ground semi-roughing profile.
Centre cutting teeth for plunging.
Eccentric relief ground.
Universal cutting edge geometry.

45°

19 1640

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	CuZn	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	N						
19 1640		83		30	25	25											55	●		●			

Ø k10 D_c	11W 19 1640	L_s	L_{tot}		45°	< 750 N f_z
	Semi-roughing end mill					
mm		mm	mm	mm	mm	mm
6	XXX	13	57	6	0.3	0.015
7	XXX	16	66	10	0.3	0.015
8	XXX	19	69	10	0.3	0.02
9	XXX	19	69	10	0.3	0.02
10	XXX	22	72	10	0.3	0.03
11	XXX	22	79	12	0.5	0.03
12	XXX	26	83	12	0.5	0.05
14	XXX	26	83	12	0.5	0.05
15	XXX	26	83	12	0.5	0.05
16	XXX	32	92	16	0.5	0.06
18	XXX	32	92	16	0.5	0.06
20	XXX	38	104	20	0.5	0.07
25	XXX	45	121	25	0.5	0.07

HSS Co8 | DIN 844 B | NF | k10 | 3 | 25° | h6 DIN 1835 B

Garant Semi-roughing end mill

Relief ground truncated-type roughing profile.
Centre cutting teeth for plunging.
The wide tooth lands can be re-ground frequently without losing the profile.
Universal cutter for profile milling or for plunging.

Advantage: Compared to multi–flute cutters, **better chip evacuation due to larger flutes.**

19 1700

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	GG(G)	CuZn	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	K	N						
19 1700		83		**30**	**25**	25										23	55	○		●			

Ø k10 D_c	11W	19 1700	L_s	L_{tot}		45°	< 750 N f_z
		Semi-roughing end mill					
mm			mm	mm	mm	mm	mm
8		XXX	38	88	10	0.3	0.016
10		XXX	45	95	10	0.3	0.025
12		XXX	53	110	12	0.5	0.04
14		XXX	53	110	12	0.5	0.04
16		XXX	63	123	16	0.5	0.05
20		XXX	75	141	20	0.5	0.06

HSS Co8 | DIN 844 B | NF | k12 | 27-30° | h6 DIN 1835 B

4 | 5 | 6

Garant Semi-roughing end mill

19 1710 – **Relief ground fine pitch semi-roughing profile.**
19 1720 – Size 10 – 30 centre cutting teeth for plunging.
or a considerable performance improvement with special ground **chip breaker flutes.**

Advantage:

19 1720 – The chip breaker flutes **facilitate chip evacuation** and at the same time ensure a **good component surface finish.**

19 1710

19 1720

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	GG(G)	CuZn	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	K	N						
19 1710		83		**30**	**25**	25										23	55	●		●			
19 1720		120		**78**	**55**	**55**								**17**	14	46	92	●		●		○	

Ø k12 D_c	11W	19 1710	11W	19 1720	No. of teeth Z		L_s	L_{tot}		< 750 N f_z
		Semi-roughing end mill			19 1710	19 1720				
mm				TiAlN			mm	mm	mm	mm
6		XXX		XXX	4	4	13	57	6	0.012
7		XXX		XXX	4	4	16	66	10	0.012
8		XXX		XXX	4	4	19	69	10	0.018
9		XXX		XXX	4	4	19	69	10	0.018
10		XXX		XXX	4	4	22	72	10	0.028
11		XXX		XXX	4	4	26	79	12	0.028
12		XXX		XXX	4	4	26	83	12	0.042
14		XXX		XXX	4	4	26	83	12	0.042
16		XXX		XXX	4	4	32	92	16	0.05
18		XXX		XXX	4	4	32	92	16	0.05
20		XXX		XXX	4	4	38	104	20	0.06
22		XXX		XXX	5	4	38	104	20	0.06
25		XXX		XXX	5	4	45	121	25	0.064
28		–		XXX	–	6	45	121	25	0.068
30		XXX		XXX	5	6	45	121	25	0.068

HSS Co8 | Standard | NF | js12 | 4 | 30° | h6 DIN 1835 B

Garant® High performance milling cutter

Multi-flute mills **with ground chip breaker on flutes.**
End cutting teeth for plunging.
Special surface treatment.

Advantage: **Applicable as finishing cutter with particularly high cutting performance.**

19 1850

19 1870

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	GG(G)	CuZn	Uni
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	K	N	
19 1850/1870		83		**28**	**23**	23										23	55	●

Ø js12 D_c mm	11W 19 1850 High performance end mill	11W 19 1870 High performance end mill	L_s 19 1850 mm	L_s 19 1870 mm	L_{tot} 19 1850 mm	L_{tot} 19 1870 mm	mm	< 750 N f_z mm
6	XXX	XXX	15	25	60	65	6	0.012
7	XXX	XXX	20	35	65	80	10	0.012
8	XXX	XXX	20	35	65	80	10	0.018
9	XXX	XXX	25	45	75	95	12	0.018
10	XXX	XXX	25	45	75	95	12	0.03
11	XXX	XXX	30	55	80	105	12	0.03
12	XXX	XXX	30	55	80	110	12	0.04
13	XXX	XXX	35	55	90	110	16	0.04
14	XXX	XXX	35	55	90	110	16	0.04
15	XXX	XXX	40	65	95	120	16	0.04
16	XXX	XXX	40	65	95	120	16	0.05
17	XXX	–	40	–	105	–	20	0.05
18	XXX	XXX	40	65	105	130	20	0.05
20	XXX	XXX	45	75	110	140	20	0.06
22	XXX	–	45	–	110	–	20	0.06
24	XXX	–	50	–	120	–	25	0.07
25	XXX	XXX	50	90	120	160	25	0.07

HSS Co8 | DIN 844 B | NR | js12 | 3 | 25° | h6 DIN 1835 B

Garant® Roughing end mill

Relief ground knuckle form profile.
Centre cutting teeth for plunging.
Universal end mills for profile milling or for plunging.

19 2480

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	GG(G)	CuZn	Uni
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	K	N	
19 2480		83		**28**	**23**	23										23	55	●

Ø js12 D_c mm	11W 19 2480 Roughing end mill	L_s mm	L_{tot} mm	mm	< 750 N f_z mm
6	XXX	24	68	6	0.006
8	XXX	38	88	10	0.009
9	XXX	38	88	10	0.009
10	XXX	45	95	10	0.014
11	XXX	45	102	12	0.014

Ø js12 D_c mm	11W 19 2480 Roughing end mill	L_s mm	L_{tot} mm	mm	< 750 N f_z mm
12	XXX	53	110	12	0.021
14	XXX	53	110	12	0.021
15	XXX	53	110	12	0.021
16	XXX	63	123	16	0.025
20	XXX	75	141	20	0.031

DIN 844 B | NR | js12 | 3 | 25° | h6 DIN 1835 B

Roughing end mill

Relief ground knuckle form profile.
Centre cutting teeth for plunging.
Universal end mills for profile milling or for plunging.

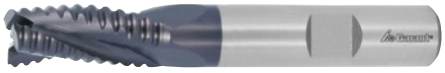
19 2445 – For the most demanding metal removal rates.
19 2450 – Economy version.

Advantage: Compared to multi–flute cutters, **better chip evacuation due to larger flutes.**

HSS Co8 | 45°

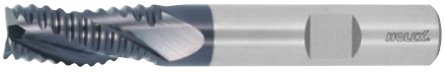
19 2400

HSS PM | 45°



19 2445

HSS Co8 | 45°



19 2450

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	GG(G)	CuZn	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	K	N						
19 2400		83		**28**	**23**	23										23	55	●		●			
19 2445		138		**83**	**64**	**64**	**37**	32						**23**	18	55	110	●		●		●	
19 2450		120		**78**	**55**	**55**								**17**	14	46	92	●		●			

Ø js12 D_c	11W 19 2400	11W 19 2445	12W 19 2450	L_s	L_{tot}		45°	< 750 N f_z
	Roughing end mill							
	HSS-Co8	HSS-PM TiAlN	HSS-Co8 TiAlN					
mm				mm	mm	mm	mm	mm
6	XXX	XXX	XXX	13	57	6	0.3	0.01
7	XXX	XXX	XXX	16	66	10	0.3	0.01
8	XXX	XXX	XXX	19	69	10	0.3	0.015
9	XXX	XXX	XXX	19	69	10	0.4	0.015
10	XXX	XXX	XXX	22	72	10	0.4	0.025
11	XXX	–	XXX	22	79	12	0.6	0.025
12	XXX	XXX	XXX	26	83	12	0.6	0.03
14	XXX	XXX	XXX	26	83	12	0.6	0.03
15	XXX	–	XXX	26	83	12	0.6	0.03
16	XXX	XXX	XXX	32	92	16	0.6	0.04
18	XXX	XXX	XXX	32	92	16	0.6	0.04
20	XXX	XXX	XXX	38	104	20	0.6	0.05
22	XXX	–	–	38	104	20	0.6	0.05
25	XXX	XXX	XXX	45	121	25	0.6	0.055

DIN 844 B | WR | js14 | 3 | 36° | h6 DIN 1835 B

Roughing end mill

Relief ground knuckle form profile.
Centre cutting teeth for plunging.

- Wide, precision ground chip flutes.
- Special chip angle for aluminium and non-ferrous metals.

19 2541 – For the most demanding metal removal rates.

Advantage: Suitable **for high machining volumes** due to the large flutes.

HSS Co8 | 45°

19 2520

HSS PM | 45°

19 2541

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	Graphite GRP CRP	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	N						
19 2520	**138**	**83**												9					●		○		
19 2541		**138**												23					●		●		

Ø js14 D_c	11W 19 2520	11W 19 2541	L_s	L_{tot}		45°		Alu f_z
	Roughing end mill					19 2520	19 2541	
	HSS-Co8	HSS-PM TiAlN						
mm			mm	mm	mm	mm	mm	mm
10	XXX	XXX	45	95	10	0.3	0.5	0.04
12	XXX	XXX	53	110	12	0.5	0.7	0.05
14	XXX	XXX	53	110	12	0.5	0.7	0.055
16	XXX	XXX	63	123	16	0.5	0.7	0.075
18	XXX	XXX	63	123	16	0.5	0.7	0.075
20	XXX	XXX	75	141	20	0.5	1	0.08
22	XXX	–	75	141	20	0.5	–	0.08
25	XXX	XXX	90	166	25	0.5	1	0.09

DIN 844 B | NR | 30° | h6 DIN 1835 B

4 | 5 | 6

Roughing end mill

With relief ground knuckle form profile.
Up to size 20 with end cutting teeth profile for plunging.
The wide teeth lands permit multiple re-grinding without losing the profile.

19 2645 – **HSS-PM** – For highest demands on metal removal rates.
19 2645/2650 – Sizes 6M to 25M – **MID mills:** dimensions to **factory standard**,**which is between** DIN 844 **stub** and DIN 844 **long**.
19 2650 – Economy version.

HSS Co8 | k12

19 2600

HSS PM | js12

19 2645

HSS Co8 | js12

19 2650

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	GG(G)	CuZn	Uni				
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	K	N					
19 2600		83		**30**	**25**	**25**	12									23		●		●		
19 2645		138		**83**	**64**	**64**	**37**	32						**23**	18	55	110	●		●		●
19 2650		120		**78**	**55**	**55**	**29**	25						**17**	14	46	92	●		●		○

Ø D_c	11W 19 2600 Garant	11W 19 2645 Garant	12W 19 2650 HOLEX	No. of teeth Z	L_s	L_{tot}		45°		< 750 N f_z	
	Roughing end mill							19 2600	19 2645 19 2650	19 2600 19 2650	19 2645
	HSS-Co8	HSS-PM	HSS-Co8								
		TiAlN	TiAlN								
mm					mm	mm	mm	mm	mm	mm	mm
6	XXX	XXX	XXX	4	13	57	6	0.5	0.3	0.006	0.015
6M	–	XXX	XXX	4	19	63	6	–	0.3	0.006	0.015
7	XXX	XXX	XXX	4	16	66	10	0.5	0.3	0.006	0.015
8	XXX	XXX	XXX	4	19	69	10	0.5	0.3	0.009	0.025
8M	–	XXX	XXX	4	28	78	10	–	0.3	0.009	0.025
9	XXX	XXX	XXX	4	19	69	10	0.5	0.4	0.009	0.025
10	XXX	XXX	XXX	4	22	72	10	0.5	0.4	0.014	0.035
10M	–	XXX	XXX	4	35	84	10	–	0.4	0.014	0.035
11	XXX	XXX	XXX	4	22	79	12	0.5	0.6	0.014	0.035
12	XXX	XXX	XXX	4	26	83	12	0.5	0.6	0.021	0.05
12M	–	XXX	XXX	4	40	97	12	–	0.6	0.021	0.05
13	XXX	XXX	XXX	4	26	83	12	0.5	0.6	0.021	0.05
14	XXX	XXX	XXX	4	26	83	12	0.5	0.6	0.021	0.05
15	XXX	XXX	XXX	4	26	83	12	0.5	0.6	0.021	0.05
16	XXX	XXX	XXX	4	32	92	16	0.5	0.6	0.025	0.06
16M	–	XXX	XXX	4	48	108	16	–	0.6	0.025	0.06
17	XXX	–	–	4	32	92	16	0.5	–	0.025	–
18	XXX	XXX	XXX	4	32	92	16	0.5	0.6	0.025	0.06
19	XXX	–	–	4	32	92	16	0.5	–	0.025	–
20	XXX	XXX	XXX	4	38	104	20	0.5	0.6	0.031	0.07
20M	–	XXX	XXX	4	58	122	20	–	0.6	0.031	0.07
22	XXX	XXX	XXX	5	38	104	20	0.5	0.6	0.031	0.07
24	XXX	–	–	5	45	121	25	0.5	–	0.031	–
25	XXX	XXX	XXX	5	45	121	25	0.5	0.6	0.031	0.08
25M	–	XXX	XXX	5	68	144	25	–	0.6	0.031	0.08
26	XXX	–	–	5	45	121	25	0.5	–	0.031	–
28	XXX	XXX	XXX	5	45	121	25	0.5	0.7	0.031	0.08
30	XXX	XXX	XXX	5	45	121	25	0.5	0.7	0.031	0.08
32	XXX	XXX	XXX	6	53	133	32	0.5	0.7	0.031	0.08
35	XXX	–	–	6	53	133	32	0.5	–	0.031	–
40	XXX	–	–	6	63	155	32	0.5	–	0.031	–

HSS Co8 | DIN 844 B | NR | 27° | h6 DIN 1835 B

4 5 6

Roughing end mill

Relief ground knuckle form profile.
Up to size 20 end cutting teeth profile for plunging.
19 2720 – Economy version.

45°

19 2710

k12

45°

19 2720

js12

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	GG(G)	CuZn	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	K	N						
19 2710/2720		120		78	55	55								17	14	46	92	●		●		○	

Ø D_c	11W 19 2710 Garant	12W 19 2720 HOLEX	No. of teeth Z	L_s	L_{tot}		45°		< 750 N f_z
	Roughing end mill						19 2710	19 2720	
mm	TiAlN	TiAlN		mm	mm	mm	mm	mm	mm
6	XXX	–	4	24	68	6	0.5	–	0.01
7	XXX	–	4	30	80	10	0.5	–	0.01
8	XXX	–	4	38	88	10	0.5	–	0.014
9	XXX	–	4	38	88	10	0.5	–	0.014
10	XXX	XXX	4	45	95	10	0.5	0.4	0.02
11	XXX	–	4	45	102	12	0.5	–	0.02
12	XXX	XXX	4	53	110	12	0.5	0.6	0.03
13	XXX	–	4	53	110	12	0.5	–	0.03
14	XXX	XXX	4	53	110	12	0.5	0.6	0.03
15	XXX	–	4	53	110	12	0.5	–	0.03
16	XXX	XXX	4	63	123	16	0.5	0.6	0.05
18	XXX	–	4	63	123	16	0.5	–	0.05
20	XXX	XXX	4	75	141	20	0.5	0.6	0.06
22	XXX	–	5	75	141	20	0.5	–	0.06
25	XXX	–	5	90	166	25	0.5	–	0.06
28	XXX	–	5	90	166	25	0.5	–	0.065
30	XXX	–	5	90	166	25	0.5	–	0.065
32	XXX	–	6	106	186	32	0.5	–	0.07
40	XXX	–	6	125	217	32	0.5	–	0.07

HSS PM | DIN 844 | HR | k12 | 30° | h6 DIN 1835 B

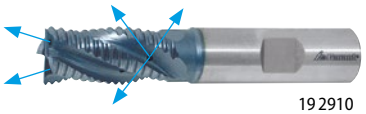
4 5

Garant Roughing end mill with through coolant feed

Relief ground fine pitch knuckle form profile. Centre cutting edge geometry for plunging. For the most demanding metal removal rates.

Advantage: The coolant is fed directly **to the cutting edges,** resulting in **longer tool life** and **complete chip clearance.**

45°



19 2910

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	GG(G)	CuZn	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	K	N						
19 2910		138		83	64	64	37	32						23	18	55	110	●		●			

Ø k12 D_c	11W 19 2910	No. of teeth Z	L_s	L_{tot}		45°	< 1100 N f_z
	Roughing end mill with internal cooling						
mm	TiAlN		mm	mm	mm	mm	mm
10	XXX	4	22	72	10	0.5	0.025
12	XXX	4	26	83	12	0.5	0.035
16	XXX	4	32	92	16	0.5	0.04
20	XXX	4	38	104	20	0.5	0.048
25	XXX	5	45	121	25	0.5	0.054

HSS Co8 | DIN 844 | HR | 30° | h6 DIN 1835 B

3 4 5

Roughing end mill

Relief ground fine pitch knuckle form profile.
Centre cutting teeth for plunging.
19 2850 – Economy version.

±0.12 | 45°

19 2840

js12 | 45°

19 2850

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	GG(G)	CuZn	Uni
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	K	N	
19 2840		120		78	55	55	29	25						17	14	46	92	●
19 2850		120		78	55	55								17			92	●

Ø D_c	11W 19 2840	12W 19 2850	No. of teeth Z		L_s	L_{tot}		45°	< 900 N f_z	
	Roughing end mill									
			19 2840	19 2850				19 2840	19 2850	
mm	TiAlN	TiAlN			mm	mm	mm	mm	mm	mm
4	XXX	–	3	–	12	55	6	0.3	–	0.007
5	XXX	–	3	–	13	57	6	0.3	–	0.007
6	XXX	XXX	3	3	13	57	6	0.3	0.3	0.01
7	XXX	–	3	–	16	66	10	0.3	–	0.01
8	XXX	XXX	4	3	19	69	10	0.3	0.3	0.014
9	XXX	–	4	–	19	69	10	0.3	–	0.014
10	XXX	XXX	4	4	22	72	10	0.3	0.3	0.018
11	XXX	–	4	–	22	79	12	0.3	–	0.018
12	XXX	XXX	4	4	26	83	12	0.3	0.4	0.026
13	XXX	–	4	–	26	83	12	0.3	–	0.026
14	XXX	XXX	4	4	26	83	12	0.3	0.4	0.026
16	XXX	XXX	4	4	32	92	16	0.3	0.4	0.033
18	XXX	–	4	–	32	92	16	0.3	–	0.033
20	XXX	XXX	4	4	38	104	20	0.3	0.4	0.043
22	XXX	–	5	–	38	104	20	0.3	–	0.043
25	XXX	–	5	–	45	121	25	0.3	–	0.054
28	XXX	–	5	–	45	121	25	0.3	–	0.062
30	XXX	–	5	–	45	121	25	0.3	–	0.065

HSS E-SPM | HRF | k12 | 30° | h6 DIN 1835 B | HPC

3 4 5 6

Roughing end mill HPC

Special **SPM** substrate with very high cobalt content.
Combines the **hardness of solid carbide** and the **toughness of PM steel.**
Centre cutting teeth profile for plunging.
Application: **For very high metal removal rates and increased machining volumes on stainless steels.**

DIN 327 | 45°

19 2852

DIN 844 | 45°

19 2855

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	Graphite GRP CRP	Uni
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	N	
19 2852/2855		159		95	74	74	42							26	21			○

Ø k12 D_c	11W 19 2852	11W 19 2855	No. of teeth Z	L_s		L_{tot}			45°	INOX > 900 N f_z	
	Roughing end mill HPC										
	HSS-E-SPM			19 2852	19 2855	19 2852	19 2855				
mm	TiAlN	TiAlN		mm	mm	mm	mm	mm	mm	mm	
6	XXX	XXX	3	8	13	52	57	6	0.3	0.008	
8	XXX	XXX	4	11	19	61	69	10	0.3	0.012	
10	XXX	XXX	4	13	22	63	72	10	0.3	0.019	
12	XXX	XXX	4	16	26	73	83	12	0.3	0.029	
14	XXX	XXX	4	16	26	73	83	12	0.3	0.03	
16	XXX	XXX	5	19	32	79	92	16	0.3	0.034	
18	XXX	XXX	5	19	32	79	92	16	0.3	0.038	
20	XXX	XXX	5	22	38	88	104	20	0.3	0.042	
25	XXX	XXX	5	26	45	102	121	25	0.3	0.047	
32	XXX	XXX	6	32	53	112	133	32	0.3	0.055	

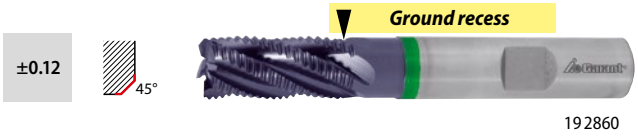
HSS PM | DIN 844 | HR | 30° | h6 DIN 1835 B

3 4 5 6

Roughing end mill

Relief ground fine pitch knuckle form profile.
Centre cutting teeth for plunging.

19 2860 – Size 6M to 25M – **MID mills:** Dimensions to **manufacturer's standard**,which is **between** DIN 844 **stub** and DIN 844 **long**.
19 2890 – Economy version.



19 2860

19 2890

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	GG(G)	CuZn	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	K	N						
19 2860		138		83	64	64	37	32						23	18	55	110	●		●		●	
19 2890		138		83	64	64	37	32						23	18		110	●		●		●	

$\varnothing D_c$	11W 19 2860 Garant	12W 19 2890 HOLEX	No. of teeth Z		L_3	L_4	$\varnothing D_4$	L_{tot}		45°	< 900 N f_z
	Roughing end mill HSS-PM		19 2860	19 2890		19 2860	19 2860				
mm	TiAlN	TiAlN			mm	mm	mm	mm	mm	mm	mm
4	XXX	–	3	–	12	–	–	55	6	0.3	0.006
5	XXX	–	3	–	13	–	–	57	6	0.3	0.006
6	XXX	XXX	4	4	13	20	5.5	57	6	0.3	0.008
6M	XXX	–	4	–	19	26	5.5	63	6	0.3	0.008
7	XXX	–	4	–	16	–	–	66	10	0.3	0.008
8	XXX	XXX	4	4	19	–	–	69	10	0.3	0.015
8M	XXX	–	4	–	28	–	–	78	10	0.3	0.015
9	XXX	–	5	–	19	–	–	69	10	0.3	0.015
10	XXX	XXX	5	5	22	31	9.5	72	10	0.3	0.024
10/4	XXX	–	4	–	22	31	9.5	72	10	0.3	0.024
10M	XXX	–	5	–	35	43	9.5	84	10	0.3	0.024
11	XXX	–	5	–	22	–	–	79	12	0.3	0.024
12	XXX	XXX	5	5	26	–	–	83	12	0.3	0.033
12/4	XXX	–	4	–	26	37	11.5	83	12	0.3	0.033
12M	XXX	–	5	–	40	51	11.5	97	12	0.3	0.033
13	XXX	–	5	–	26	–	–	83	12	0.3	0.033
14	XXX	XXX	5	5	26	–	–	83	12	0.3	0.033
14/4	XXX	–	4	–	26	–	–	83	12	0.3	0.033
15	XXX	–	5	–	26	–	–	83	12	0.3	0.033
16	XXX	XXX	5	5	32	43	15.5	92	16	0.3	0.041
16/4	XXX	–	4	–	32	43	15.5	92	16	0.3	0.041
16M	XXX	–	5	–	48	59	15.5	108	16	0.3	0.041
18	XXX	XXX	5	5	32	–	–	92	16	0.3	0.041
20	XXX	XXX	5	5	38	53	19.5	104	20	0.3	0.048
20/4	XXX	–	4	–	38	53	19.5	104	20	0.3	0.048
20M	XXX	–	5	–	58	71	19.5	122	20	0.3	0.048
22	XXX	–	5	–	38	–	–	104	20	0.3	0.052
25	XXX	XXX	6	5	45	64	24.5	121	25	0.3	0.052
25M	XXX	–	6	–	68	87	24.5	144	25	0.3	0.054
30	XXX	–	6	–	45	–	–	121	25	0.3	0.064
32	–	XXX	–	6	53	–	–	133	32	0.3	0.064

HSS E-SPM | DIN 844 | HRF | k12 | 45° | h6 DIN 1835 B | MTC

3 4 5

Garant Roughing end mill MTC

SPM substrate with very high cobalt content. Combines the **hardness of solid carbide** with the **toughness of PM steel. Dynamic special knuckle profile for roughing.**
For use as a universal roughing end mill Centre cutting edge geometry for plunging.

Application: **For very high metal removal rates and increased machining volumes.** Especially for **MTC (Multi Task Cutting)** use on the new generation of turning / milling centres.

19 2895

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	Graphite GRP CRP	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	N						
19 2895				95	**75**	**75**	**40**	35						**25**	20	14		●		●	●	○	●

Ø k12 D_c	11W	19 2895	No. of teeth Z	L_s	L_{tot}		45°	< 1100 N f_z
		Roughing end mill MTC						
		HSS-E-SPM						
mm		TiAlN		mm	mm	mm	mm	mm
6		XXX	3	13	57	6	0.2	0.014
8		XXX	4	19	69	10	0.2	0.02
10		XXX	4	22	72	10	0.2	0.032
12		XXX	4	26	83	12	0.2	0.044
14		XXX	4	26	83	12	0.2	0.051
16		XXX	5	32	92	16	0.2	0.053
18		XXX	5	32	92	16	0.2	0.059
20		XXX	5	38	104	20	0.2	0.065

DIN 844 | HR | 30° | h6 DIN 1835 B

4 5

Roughing end mill

Relief ground fine pitch knuckle form profile.
Centre cutting teeth for plunging.
19 2920 – For the most demanding metal removal rates.
19 2930 – Economy version.

Advantage:
19 2920 – Excellent results when milling dry.

HSS PM | k12

19 2920

HSS Co8 | js12

19 2930

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	GG(G)	CuZn	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	K	N						
19 2920		138	110	**83**	**64**	**64**	**37**	**32**						**23**	18	55	110	●		●		●	
19 2930		120	101	**78**	**55**									**17**			92	○		●		○	

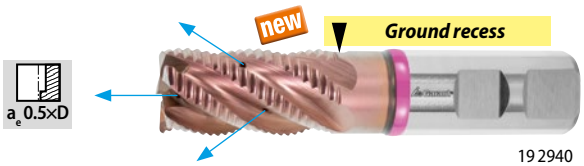
Ø D_c	11W	19 2920	12W	19 2930	No. of teeth Z	L_s	L_{tot}		45°		< 900 N f_z
		Garant		HOLEX							
		Roughing end mill									
		HSS-PM		HSS-Co8					19 2920	19 2930	
mm		TiAlN		TiAlN		mm	mm	mm	mm	mm	mm
10		XXX		XXX	4	45	95	10	0.5	0.18	0.015
12		XXX		XXX	4	53	110	12	0.5	0.18	0.025
14		XXX		–	4	53	110	12	0.5	–	0.025
16		XXX		XXX	4	63	123	16	0.5	0.25	0.03
18		XXX		–	4	63	123	16	0.5	–	0.03
20		XXX		XXX	4	75	141	20	0.5	0.25	0.035
25		XXX		–	5	90	166	25	0.5	–	0.035
30		XXX		–	5	90	166	25	0.5	–	0.035

HSS PM | DIN 844 | HR | k10 | 40° | ≠ | h6 DIN 6535 HB | HPC | 4 | 5 | 6

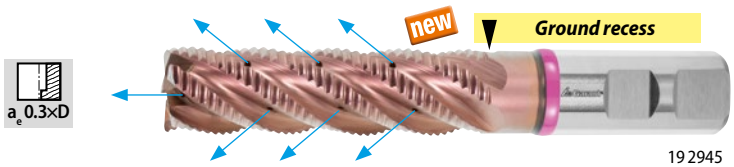
GARANT Master Titan HSS-PM roughing end mill HPC

Special **SPM** substrate with very high cobalt content.
Combines the **hardness of solid carbide** and the **toughness of PM steel.**
Centre cutting teeth profile for plunging.

Advantage: **For very high metal removal rates and increased machining volumes on stainless steels.**



19 2940



19 2945

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	Graphite GRP CRP	Uni
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	N	
19 2940/2945														24	20	28		

Ø k10 D_c / RS_1	117	19 2940	No. of teeth Z	RS_1	L_s	L_4	Ø D_4	L_{tot}		INOX > 900 N f_z	Ti > 850 N f_z
		GARANT Master Titan HSS-PM roughing end mill HPC									
mm		TiAlN		mm	mm	mm	mm	mm	mm	mm	mm
16/2,0		XXX	4	2	32	42	15	92	16	0.03	0.035
16/4,0		XXX	4	4	32	42	15	92	16	0.03	0.035
20/2,0		XXX	4	2	38	52	19	104	20	0.04	0.045
20/4,0		XXX	4	4	38	52	19	104	20	0.04	0.045
25/2,0		XXX	5	2	45	63	24	121	25	0.05	0.055
25/4,0		XXX	5	4	45	63	24	121	25	0.05	0.055
32/2,0		XXX	6	2	53	70	31	133	32	0.06	0.07
32/4,0		XXX	6	4	53	70	31	133	32	0.06	0.07

Ø k12 D_c	117	19 2945	No. of teeth Z	RS_1	L_s	L_4	Ø D_4	L_{tot}		INOX > 900 N f_z	Ti > 850 N f_z
		GARANT Master Titan HSS-PM roughing end mill HPC									
mm		TiAlN		mm	mm	mm	mm	mm	mm	mm	mm
16/2,0		XXX	4	2	63	73	15	123	16	0.025	0.025
16/4,0		XXX	4	4	63	73	15	123	16	0.025	0.025
20/2,0		XXX	4	2	75	89	19	141	20	0.03	0.03
20/4,0		XXX	4	4	75	89	19	141	20	0.03	0.03
25/2,0		XXX	5	2	90	108	24	166	25	0.04	0.04
25/4,0		XXX	5	4	90	108	24	166	25	0.04	0.04
32/2,0		XXX	6	2	106	123	31	186	32	0.05	0.05
32/4,0		XXX	6	4	106	123	31	186	32	0.05	0.05

HSS Co8 | NR | k12 | 30° | h6 DIN 1835 B

5 | 6

Garant Roughing end mill

Relief ground knuckle form profile.
End face recessed. Wide lands permit frequent regrinding without losing the profile.
Advantage: For roughing at low cutting depths (predominantly face milling).
Very reliable, due to lower load on the machine spindle.

19 2970

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	GG(G)	CuZn	Uni
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	K	N	
19 2970		83		**28**	**23**	23	12									23	55	●

Ø k12 D_c mm	11W 19 2970 Roughing end mill	No. of teeth Z	L_s mm	L_{tot} mm	mm	< 750 N f_z mm
30	XXX	5	30	90	20	0.055
35	XXX	6	30	90	20	0.055

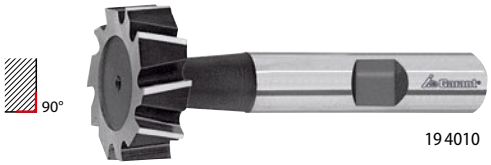
Ø k12 D_c mm	11W 19 2970 Roughing end mill	No. of teeth Z	L_s mm	L_{tot} mm	mm	< 750 N f_z mm
40	XXX	6	32	95	25	0.055

HSS Co5 | DIN 850 D/F | e8 | h6 DIN 1835 B

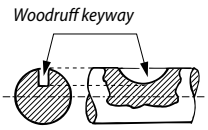
Garant Woodruff keyseating cutter

Peripheral cutting, alternate set teeth (staggered).
The sides of the teeth are ground to give clearance and thus cannot jam in the component.
Special surface treatment.

Note: For milling Woodruff keyways to DIN 6888 or for milling small slots.



19 4010



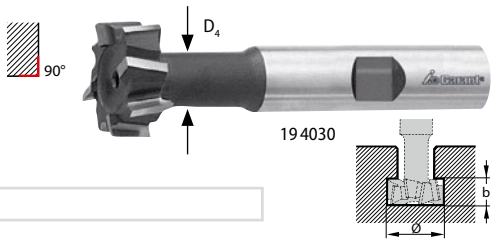
Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	GG(G)	CuZn	Uni
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	K	N	
19 4010	250	**70**		**35**	**28**											22	35	●

Ø×width h11×e8 D_c mm	11W 19 4010 Woodruff keyseating cutter	No. of teeth Z	for Woodruff keyways to DIN 6888 mm	L_{tot} mm	mm	< 750 N f_z mm
10,5×2	XXX	6	2.0×3.7	50	6	0.045
10,5×2,5	XXX	6	2,5×3,7	50	6	0.045
10,5×3	XXX	6	3.0×3.7	50	6	0.045
13,5×2	XXX	10	2.0×5.0	56	10	0.06
13,5×2,5	XXX	10	2,5×5,0	56	10	0.06
13,5×3	XXX	10	3.0×5.0	56	10	0.06
13,5×4	XXX	10	4.0×5.0	56	10	0.06
16,5×2,5	XXX	10	2,5×6,5	56	10	0.06
16,5×3	XXX	10	3.0×6.5	56	10	0.06
16,5×4	XXX	10	4.0×6.5	56	10	0.06
16,5×5	XXX	10	5.0×6.5	56	10	0.06
19,5×3	XXX	10	3.0×7.5	56	10	0.06
19,5×4	XXX	10	4.0×7.5	56	10	0.06
19,5×5	XXX	10	5,0×7,5	63	10	0.06
22,5×4	XXX	10	4.0×9.0	63	10	0.08
22,5×5	XXX	10	5,0×9,0	63	10	0.08
22,5×6	XXX	10	6,0×9,0	63	10	0.08

Ø×width h11×e8 D_c mm	11W 19 4010 Woodruff keyseating cutter	No. of teeth Z	for Woodruff keyways to DIN 6888 mm	L_{tot} mm	mm	< 750 N f_z mm
25,5×5	XXX	10	5,0×10,0	63	10	0.08
25,5×6	XXX	10	6,0×10,0	63	10	0.08
25,5×7	XXX	10	7.0×10.0	63	10	0.08
25,5×8	XXX	10	8,0×10,0	63	10	0.08
28,5×5	XXX	10	5,0×11,0	63	10	0.08
28,5×6	XXX	10	6,0×11,0	63	10	0.08
28,5×7	XXX	10	7,0×11,0	63	10	0.08
28,5×8	XXX	10	8,0×11,0	63	10	0.08
32,5×5	XXX	12	5,0×13,0	71	12	0.09
32,5×6	XXX	12	6,0×13,0	71	12	0.09
32,5×8	XXX	12	8,0×13,0	71	12	0.09
38,5×7	XXX	12	7,0×15,0	71	12	0.09
38,5×8	XXX	12	8,0×15,0	71	12	0.09
38,5×9	XXX	12	9,0×15,0	71	12	0.09
38,5×10	XXX	12	10,0×15,0	71	12	0.09
45,5×10	XXX	12	10,0×16,0	71	12	0.09

HSS Co5 | d11 | 15° | h6 DIN 1835 B

Garant T-slot cutter



The mill cuts on all three sides.
Due to alternate set teeth (staggered), high cutting performance is achieved.

Note: For milling T-slots to DIN 650 into machine tables on jigs and fixtures.

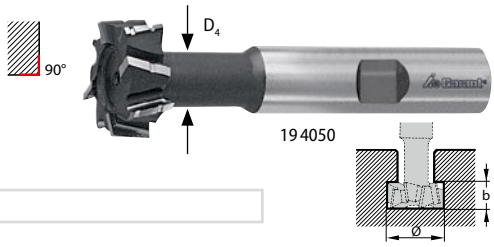
Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	GG(G)	CuZn	Uni
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	K	N	
19 4030	250	70		35	28											22	35	●

Ø×width d11×d11 D_C	11W 19 4030 T-slot cutter	No. of teeth Z	for T-slots DIN 650	Ø D_4	L_{tot}		< 750 N f_z
mm			mm	mm	mm	mm	mm
12,5×6	XXX	6	6	5	57	10	0.06
16×8	XXX	6	8	7	62	10	0.06
18×8	XXX	6	10	8	70	12	0.06
21×9	XXX	8	12	10	74	12	0.08

Ø×width d11×d11 D_C	11W 19 4030 T-slot cutter	No. of teeth Z	for T-slots DIN 650	Ø D_4	L_{tot}		< 750 N f_z
mm			mm	mm	mm	mm	mm
25×11	XXX	8	14	12	82	16	0.08
28×12	XXX	8	16	13	85	16	0.08
32×14	XXX	8	18	15	90	16	0.09

HSS Co5 | d11 | 15° | h6 DIN 1835 B

Garant T-slot semi-roughing cutter



Cuts on all three sides.
Alternate set teeth with ground chip breaker on flutes.

Note: For milling T-slots to DIN 650.

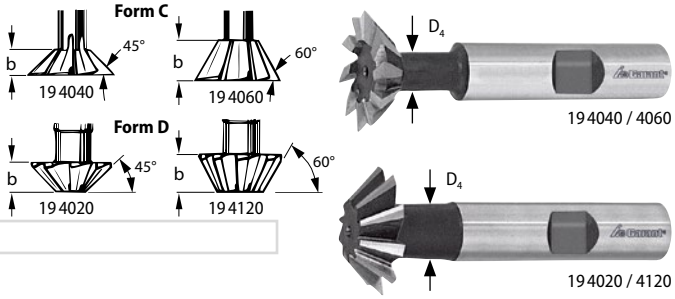
Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	GG(G)	CuZn	Uni
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	K	N	
19 4050	250	70		35	28											22	35	●

Ø×width d11×d11 D_C	11W 19 4050 T-slot semi-roughing cutter	No. of teeth Z	for T-slots DIN 650	Ø D_4	L_{tot}		< 750 N f_z
mm			mm	mm	mm	mm	mm
12,5×6	XXX	6	6	5	57	10	0.06
16×8	XXX	8	8	7	62	10	0.06
18×8	XXX	8	10	8	70	12	0.06
21×9	XXX	8	12	10	74	12	0.08
25×11	XXX	8	14	12	82	16	0.08

Ø×width d11×d11 D_C	11W 19 4050 T-slot semi-roughing cutter	No. of teeth Z	for T-slots DIN 650	Ø D_4	L_{tot}		< 750 N f_z
mm			mm	mm	mm	mm	mm
28×12	XXX	8	16	13	85	16	0.08
32×14	XXX	8	18	15	90	16	0.09
36×16	XXX	8	20	17	103	25	0.09
40×18	XXX	8	22	19	108	25	0.09

HSS Co5 | DIN 1833 | js16 | h6 DIN 1835 B

Garant Dovetail milling cutter



Special surface treatment.
19 4020/4120 – Form D cuts only on the circumference, straight teeth.
19 4040/4060 – Form C cuts frontal and on the circumference.

Note: For milling small dovetails in tool making and machine building.

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	GG(G)	CuZn	Uni
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	K	N	
19 4020–19 4120	250	70		35	28											22	35	●

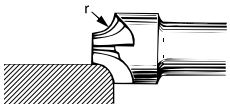
Ø js16 D_C	11W 19 4040 Dovetail milling cutter, form C	11W 19 4020 Dovetail milling cutter, form D	11W 19 4060 Dovetail milling cutter, form C	11W 19 4120 Dovetail milling cutter, form D	No. of teeth Z	Dimension b		Ø D_4				L_{tot}		< 750 N f_z
						19 4040 19 4020	19 4060 19 4120	19 4040	19 4020	19 4060	19 4120			
mm	45°	45°	60°	60°		mm	mm	mm	mm	mm	mm	mm	mm	mm
16	XXX	XXX	XXX	XXX	6	4	6.3	6.7	8	6	8.2	60	12	0.06
20	XXX	XXX	XXX	XXX	8	5	8	7	10	7.8	10.5	63	12	0.08
22	XXX	XXX	XXX	XXX	8	6	9	8	10.2	10	10.2	67	12	0.08
25	XXX	XXX	XXX	XXX	10	6.3	10	8	11	9	11.5	67	12	0.08
28	XXX	XXX	XXX	XXX	10	7.5	11	8.5	14	13	14	80	16	0.08
32	XXX	XXX	XXX	XXX	12	8	12.5	13	15	15	15	71	16	0.09
38	XXX	XXX	XXX	XXX	14	10	16	15	15	15	15	80	16	0.09

HSS Co5 | H11 | h6 DIN 1835 B

4 | 6

Garant Corner rounding cutter

Straight flutes. Special surface treatment.



19 4220

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	GG(G)	CuZn	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	K	N						
19 4220	138	**83**		**28**	**23**	23										23	55	●		●			

Radius r H11 D_C	11W 19 4220 Corner rounding cutter	No. of teeth Z	small ∅	large ∅	L_{tot}		< 750 N f_z
mm			mm	mm	mm	mm	mm
1	XXX	4	6	8	60	10	0.003
1,5	XXX	4	6	9	60	10	0.003
2	XXX	4	6	10	60	10	0.005
2,5	XXX	4	6	11	60	10	0.005
3	XXX	4	6	12	60	12	0.005
4	XXX	4	6	14	60	12	0.007
5	XXX	4	6	16	60	16	0.007
6	XXX	4	8	20	67	16	0.01
8	XXX	4	8	24	71	16	0.015
10	XXX	4	8	28	85	25	0.024
12	XXX	4	10	34	90	25	0.032
16	XXX	6	16	48	100	25	0.053

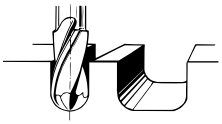
HSS PM | Type N | e8 | 2 | 30° | a_e 0.05×D | h6 DIN 1835 B

Garant Ball nose slot drill

Centre cutting edge geometry for plunging.
For the most demanding metal removal rates.

Note: For milling concave slots or for milling radius transitions.
Suitable for use as a copy mill and for mould making.
f_z for a_p 0.05×D.

19 4302



Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	GG(G)	CuZn	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	K	N						
19 4302		138	110	**83**	**64**	**64**	**37**	32						**23**	18	55	110	●		●		●	

∅ e8 D_C	11W 19 4302 Ball nose slot drill HSS-PM TiAlN	L_s	L_{tot}		<750 N f_z
mm		mm	mm	mm	mm
2	XXX	4	48	6	0.006
3	XXX	5	49	6	0.006
4	XXX	7	51	6	0.012
5	XXX	8	52	6	0.012
6	XXX	8	52	6	0.016
7	XXX	10	60	6	0.016
8	XXX	11	61	8	0.024
9	XXX	11	61	8	0.024
10	XXX	13	63	10	0.038
11	XXX	13	70	10	0.038
12	XXX	16	73	12	0.052
13	XXX	16	73	12	0.052

∅ e8 D_C	11W 19 4302 Ball nose slot drill HSS-PM TiAlN	L_s	L_{tot}		<750 N f_z
mm		mm	mm	mm	mm
14	XXX	16	73	12	0.052
15	XXX	16	73	14	0.052
16	XXX	19	79	16	0.066
18	XXX	19	79	16	0.066
19	XXX	19	79	16	0.066
20	XXX	22	88	20	0.076
22	XXX	22	88	20	0.076
24	XXX	26	102	20	0.076
25	XXX	26	102	25	0.076
26	XXX	26	102	25	0.076
30	XXX	26	102	25	0.076

Categorisation of the tools by application based on DIN ISO 513

Material group	Material designation		Strength (N/mm²)
17.0	Long-chipping Al; wrought Al alloy; Mg	N	< 530
17.1	Short-chipping Al alloys	N	< 600
17.2	Cast Al alloys > 10 % Si	N	< 600
18.0	Low-alloy copper	N	< 400
18.1	Short-chipping brass	N	< 600
18.2	Long–chipping brass	N	< 600
18.3	Short–chipping bronze	N	< 600
18.4	Short–chipping bronze	N	650 – 850
18.5	Long-chipping bronze	N	< 850
18.6	Long-chipping bronze	N	850 – 1200

GARANT Master ALU*

20 2004, GARANT Master Alu PickPocket

20 3115, GARANT Master milling cutter TPC

20 3205, GARANT Master Alu finishing cutter

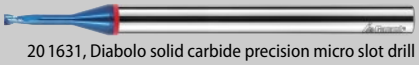
20 5255, GARANT Master Alu SlotMachine

N

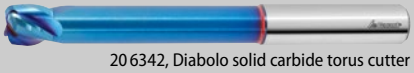
Material group	Material designation		Strength (N/mm²)
10.0	Hardened steels	H	45 – 50 HRC
10.1	Hardened steels	H	50 – 55 HRC
10.2	Hardened steels	H	55 – 60 HRC
10.3	Hardened steels	H	60 – 65 HRC
10.4	Hardened steels	H	65 – 67 HRC
10.5	Hardened steels	H	67 – 70 HRC

GARANT hard machining*

20 3079, solid carbide milling cutter with chip separators



20 1631, Diabolo solid carbide precision micro slot drill

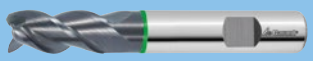


20 6342, Diabolo solid carbide torus cutter

H

Hoffmann Group colour ring code	Alu	Alu	Alu cast > 10 % Si	Cu	CuZn	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC
Colour code DIN ISO 513	DIN					ISO					513				
	N	N	N	N	N	P	P	P	P	P	H	H	H	H	H

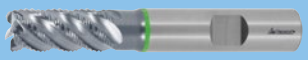
P



20 2404, GARANT Master Steel PickPocket

20 3035, GARANT Master Steel solid carbide roughing end mill

20 4018, GARANT Master Steel solid carbide finishing cutter



20 5550, GARANT Master Steel SlotMachine

GARANT Master Steel*

Material group	Material designation		Strength (N/mm²)
1.0	General structural steels	P	< 500
1.1	General structural steels	P	500 – 850
2.0	Free-cutting steels	P	< 850
2.1	Free-cutting steels	P	850 – 1000
3.0	Unalloyed heat-treatable steels	P	< 700
3.1	Unalloyed heat-treatable steels	P	700 – 850
3.2	Unalloyed heat-treatable steels	P	850 – 1000
4.0	Alloyed heat-treatable steels	P	850 – 1000
4.1	Alloyed heat-treatable steels	P	1000 – 1200
5.0	Unalloyed case-hardening steels	P	< 750
6.0	Alloyed case-hardening steels	P	< 1000

Material group	Material designation		Strength (N/mm²)
6.1	Alloyed case-hardening steels	P	>1000
7.0	Nitriding steels	P	< 1000
7.1	Nitriding steels	P	>1000
8.0	Tool steels	P	< 850
8.1	Tool steels	P	850 – 1100
8.2	Tool steels	P	1100 – 1400
9.0	High-speed steels	P	830 – 1200
11.0	Abrasion-resistant structural steel	P	1350
11.1	Abrasion-resistant structural steel	P	1800
12.0	Spring steels	P	< 1500
13.3	Stainless steels, martensitic	P	< 1100

*Tool selection

Material group	Material designation		Strength (N/mm²)
13.0	Stainless steels, sulphuretted	M	< 700
13.1	Stainless steels, austenitic	M	< 700
13.2	Stainless steels, austenitic	M	< 850

GARANT Master INOX*

20 2989, GARANT Master INOX M

20 5450, GARANT Master INOX M SlotMachine

20 7474, GARANT Master INOX solid carbide ball nose slot drill

M

Material group	Material designation		Strength (N/mm²)
15.0	Cast iron (GG)	K	< 180 HB
15.1	Cast iron (GG)	K	> 180 HB
15.2	Cast iron (GGG, GT)	K	> 180 HB
15.3	Cast iron (GGG, GT)	K	> 260 HB

GARANT machining cast iron*

20 2392, GARANT solid carbide milling cutter

20 6300, GARANT solid carbide torus cutter

K

	INOX < 900 N	INOX > 900 N	Ti > 850 N	Inconel®	GG(G)	GRP CRP	Graphite	Plastics
DIN ISO 513	M	M	S	S	K	O	O	O

S

20 3123, GARANT Master Titan milling cutter TPC

20 3157, GARANT Master Titan solid carbide milling cutter

20 3633, GARANT Master Titan finishing cutter

GARANT Master Titan*

Material group	Material designation		Strength (N/mm²)
14.0	Special alloys	S	< 1200
16.0	Titanium, titanium alloys	S	< 850
16.1	Titanium, titanium alloys	e	850 – 1200

O

20 3123, GARANT Master Titan milling cutter TPC

20 3157, GARANT Master Titan solid carbide milling cutter

GARANT non-metallic materials*

Material group	Material designation		Strength (N/mm²)
19.0	Graphite	O	
20.0	Thermoplastic	O	
20.0.1	Acrylic	O	
20.0.2	PE-HD	O	
20.0.3	PA 66	O	
20.0.4	PEEK	O	
20.1	Thermoset plastic	O	
20.1.1	PF 31	O	
20.2	GRP and CRP	O	
20.2.1	AFRP Aramid	O	
20.2.10	MMC	O	
20.2.11	CRP	O	
20.2.2	PVDF GF20	O	
20.2.3	POM GF25	O	
20.2.4	PA 66 GF30	O	
20.2.5	PEEK GF30	O	
20.2.6	PTFE CF25	O	
20.2.7	PEEK CF30	O	
20.2.9	Honeycomb sandwich	O	

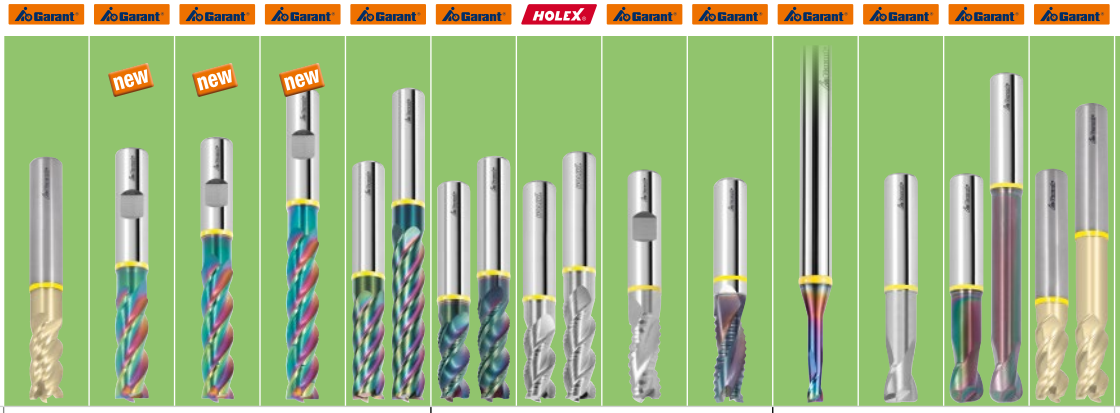
Garant HOLEX Solid carbide milling cutters for machining non-ferrous metals

N

Milling cutter type	Milling cutters												
DIN >	Man. std	Man. std	Man. std	Man. std	Man. std	6527	6527	6527	Man. std	Man. std	6527	Man. std	6527
			GARANT Master Alu	GARANT Master Alu	Micro precision		GARANT Master Alu						
Hoffmann Group Code													
Item number	201040 201043	201045 201046	201070	201075	201140	201170 201270	201260	201200 201280	201735	202239 202241/42	202243 202244/49	202247 202256/57	202270 202272/78
Milling cutter type	W	W	W	W	W	W	W	W	W	W	W	W	W
Application recommendation													
Size range (Ø mm)	1 – 12	1 – 12	2 – 12	2 – 12	0.1 – 3	2 – 20	2 – 20	2 – 20	1 – 20	3 – 20	1 – 25	4 – 20	1 – 20
Cutting edge length (mm)	6 – 45	4 – 45	5 – 33	5 – 33	0.15 – 4.6	5 – 38	8 – 38	5 – 38	5 – 41	6 – 60	2.5 – 60	6.5 – 41	2.5 – 60
Number of cutting edges	1	1	1	1	2	2	2	2	2/3	3	3	3	3
Cooling channels IC											– / IC		– / IC
HSC / HPC / MTC / TPC / PPC	HSC	HSC	HPC	HPC	HSC	HSC	HPC		HSC		MTC	MTC	MTC
Coating		DLC		DLC	DLC	DLC	DLC		DLC				DLC
Type of shank	HA	HA	HA	HA	HA	HA	HA	HB	HA	HA	HA/HB	HA/HB	HA/HB
Secondary application to DIN ISO 513	0	0	0	0	0	0	0	0	0	0	0	0	0
Page	381	381	382	382	383-384	385	385	385	392	392	393	394	395

Garant HOLEX Solid carbide milling cutters for machining non-ferrous metals

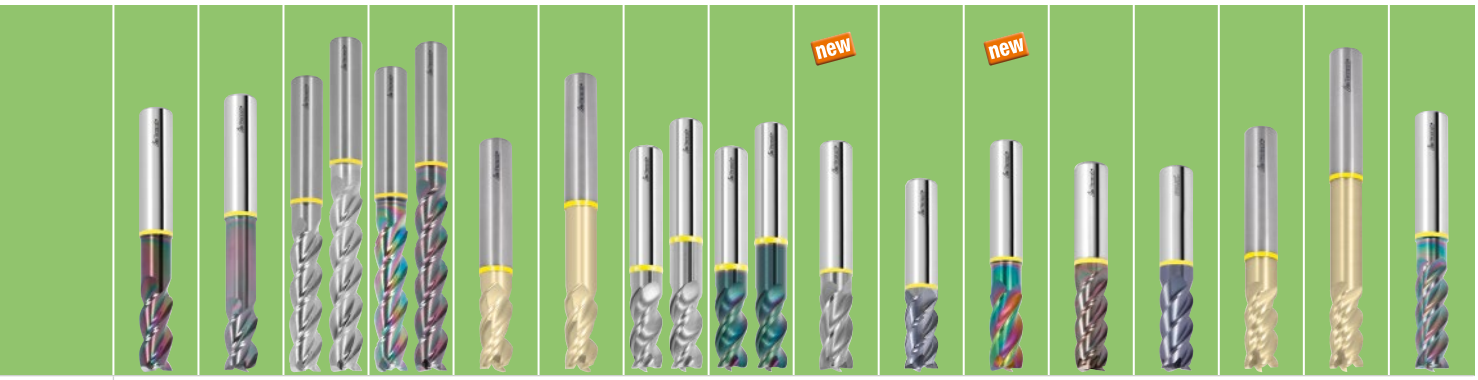
N



Milling cutter type	Milling cutters					Roughing end mills				Torus cutters			
DIN >	Man. std	Man. std	Man. std	Man. std	Man. std	6527/Man. std	6527/Man. std	Man. std	Man. std	Man. std	Man. std	Man. std	Man. std
		GARANT Master Alu	GARANT Master Alu	GARANT Master Alu	GARANT Master Alu	GARANT Master Alu SlotMachine				Micro precision			
Hoffmann Group Code													
Item number	202553	203113	203114	203115	203203 203204/05	205250 205255/65	205260 205270	205330 205335	205331 205336	206041– 206045	206040	206065 206071/75	206260 206265
Milling cutter type	W	W	W	W	W	WR	WR	WR	WR	W	W	W	W
Application recommendation													
Size range (Ø mm)	3 – 20	5 – 20	4 – 20	5 – 20	4 – 20	4 – 20	4 – 20	4 – 20	4 – 20	0.2 – 3	3 – 20	3 – 20	5 – 20
Cutting edge length (mm)	6 – 40	17 – 60	17 – 82	26 – 102	16 – 100	8 – 60	8 – 60	11 – 38	11 – 38	0.2 – 4.5	4 – 20	4 – 20	13 – 41
Number of cutting edges	4	4/5	4/5	4/5	5	3/4	3	3	3	2	2	2	3
Cooling channels IC	IC					– / IC		– / IC	– / IC				
HSC / HPC / MTC / TPC / PPC	HPC	TPC	TPC	TPC	HPC	HPC	HPC			HSC	HSC	HSC	HPC
Coating	ZOX	DLC	DLC	DLC	DLC	DLC			DLC	DLC		DLC	ZOX
Type of shank	HA/HB	HA/HB	HA/HB	HA/HB	HA	HA	HA	HB	HA	HA	HA	HA	HA
Secondary application to DIN ISO 513		0	0	0	0					0	0	0	
Page	412	426	426	426	434	442	442	443	443	451/452	453	453/454	457

Garant HOLEX Solid carbide milling cutters for machining non-ferrous metals

N



Milling cutters

Man. std	Man. std	Man. std	Man. std	Man. std	Man. std	6527/Man. std	6527/Man. std	6527	6527	6527	6527	6527	Man. std	Man. std	Man. std
						GARANT Master Alu PickPocket	GARANT Master Alu PickPocket	GARANT Master Alu		GARANT Master Alu					
202271 202273	202274 202279	202281 202283	202282 202284	202248 202255	202251 202259	202002 202012	202004 202006/14	202470	202480	202512	202515	202545	202548 202549	202551	202552
W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W
6 – 20	4 – 20	6 – 20	6 – 20	3 – 25	3 – 20	1.8 – 20	3.8 – 20	3 – 20	3 – 20	2 – 20	2 – 20	3 – 20	3 – 20	6 – 20	4 – 20
13 – 41	6.5 – 32	25 – 102	25 – 102	8 – 52	5 – 32	4 – 41	8 – 41	10 – 41	10 – 41	6 – 60	6 – 60	10 – 41	6 – 60	12 – 40	16 – 60
3	3	3	3	3	3	3	3	4	4	4	4	4	4	4	4
	– / IC			– / IC	– / IC		– / IC								
MTC	MTC	TPC	TPC	HPC	HPC	HPC	HPC	HPC	HSC	HPC	HSC		HPC	HPC	HPC
DLC	DLC		DLC	ZOX	ZOX		DLC			DLC	DLC	TiAlN	ZOX	ZOX	DLC
HA/HB	HA/HB	HA/HB	HA/HB	HA/HB	HA/HB	HA	HA	HA	HA	HA	HA	HA	HA/HB	HA/HB	HA
0	0	0	0			0	0	0	0	0	0	0			0
396	396	397	397	398	398	399	399	411	411	411	411	411	412	412	412

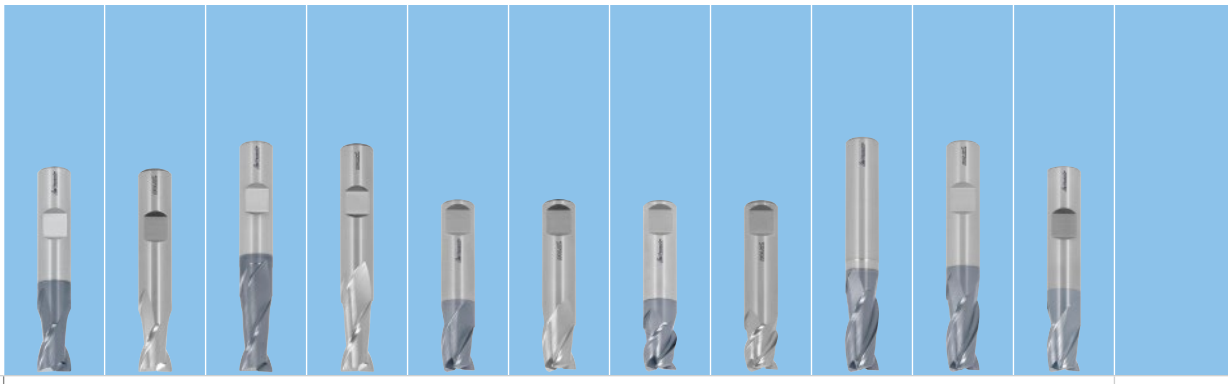
Garant HOLEX Solid carbide milling cutters for machining non-ferrous metals

N

Torus cutters						Ball nose slot drills					PPC milling cutters			
6527/man. std	Man. std	Man. std	6527/Man. std	6527	Man. std	Man. std	Man. std	Man. std	Man. std	Man. std	Man. std	Man. std	Man. std	Man. std
				GARANT Master Alu PickPocket	GARANT Master Alu PickPocket	Micro precision			high precision		tangential	conical	stub/ conical	straight
206190 206192	206210	206211	206230 206250	206255	206257	207023	207026 207028	207032 207072/92	207097	207441 207443	207517	207529– 207533	207542– 207548	207514
W	W	W	W	W	W	W	W	W	W	W	N	N	N	N
5 – 20	6 – 20	6 – 20	4 – 20	5 – 20	6 – 20	0.1 – 3	3 – 20	3 – 20	3 – 12	3 – 20	6 – 12	6 – 16	8 – 12	10 – 12
8 – 41	25 – 82	25 – 82	6.5 – 41	9 – 41	13 – 41	0.08 – 3.5	6 – 40	6 – 40	6 – 16	6 – 40	20.5 – 27	8 – 16	1.4 – 3.5	21.5 – 23
3	3	3	3	3	3	2	2	2	2	4	4	4	3/5	5
HSC	TPC	TPC	HSC	HPC	HPC	HSC	HSC	HSC	HSC	HSC	PPC	PPC	PPC	PPC
		DLC	DLC	DLC	DLC	DLC		DLC	DLC	DLC	DLC	DLC	DLC	DLC
HA	HA/HB	HA/HB	HA	HA	HA	HA	HA	HA	HA	HA	HA	HA	HA	HA
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
458	458/459	458/459	459	460	460	472/473	474	474	475	483	489	490	491	491

Garant HOLEX Solid carbide milling cutters for machining steels

P



Milling cutter type	Milling cutters										
DIN >	6527	6527	6527	6527	Man. std	Man. std	Man. std	Man. std	6527	6527	6527
Hoffmann Group Code											
Item number	201302 201303	201304	201306 201307/08	201310	202260 202261	202262	202264 202265	202266	202267 202268/69	202275	202285
Milling cutter type	N	N	N	N	N	N	N	N	N	N	N
Application recommendation											
Size range (Ø mm)	0.3 – 20	2 – 20	0.25 – 20	2 – 20	0.5 – 20	0.5 – 20	0.5 – 20	0.5 – 20	1 – 20	3 – 20	1 – 20
Cutting edge length (mm)	1 – 26	4 – 26	0.5 – 38	7 – 38	1.5 – 22	1.5 – 22	1.5 – 22	1.5 – 22	3 – 38	8 – 38	3 – 26
Number of cutting edges	2	2	2	2	3	3	3	3	3	3	3
Cooling channels IC											
HSC / HPC / MTC / TPC / PPC	HSC	HSC	HSC	HSC	HSC	HSC	HSC	HSC	HSC	HSC	HSC
Coating	AlCrN		AlCrN	AlCrN	AlCrN		AlCrN		AlCrN	AlCrN	AlCrN
Type of shank	HA/HB	HA/HB	HA/HB	HA/HB	HA/HB	HA/HB	HA/HB	HA/HB	HA/HB	HA/HB	HA/HB
Secondary application to DIN ISO 513	NMK	NMK	NMK	NMK	NMK	NMK	NMK	NMK	NMK	NMK	NMK
Page	386	386	387	387	400	400	401	401	403	403	404

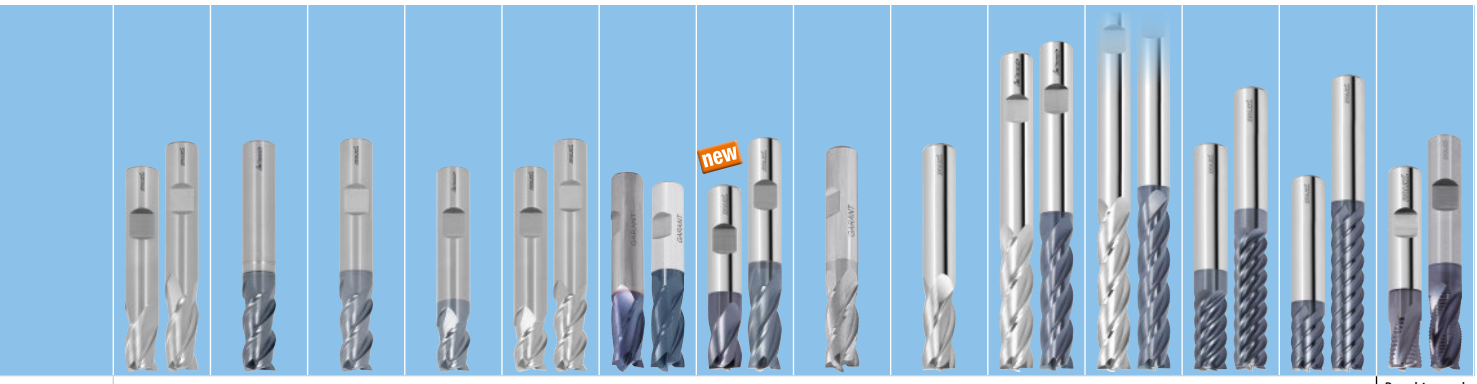
Garant HOLEX Solid carbide milling cutters for machining steels

P

Milling cutter type	Torus cutters		Ball nose slot drills								Special mills
DIN >	Man. std	Man. std	Man. std	Man. std	Man. std	Man. std	Man. std	Man. std	6527	6527	Man. std
Hoffmann-Group Code											
Item number	206140	206280 206300	207106 207115	207125 207154	207135	207175 207176	207240/80 207320	207381	207450 207460	207505 207507	208020
Milling cutter type	N	H	N	N	N	H	H	N	N	HR	N
Application recommendation											
Size range (Ø mm)	1 – 4	1 – 20	1 – 20	1 – 20	3 – 20	1 – 10	0.1 – 20	3 – 18	3 – 20	5 – 20	0.2 – 10
Cutting edge length (mm)	1.5 – 4	1.5 – 20	2 – 26	3 – 26	20– 75	0.7 – 8.7	0.2 – 26	7 – 26	5 – 26	13 – 38	0.2 – 10
Number of cutting edges	2	4	2	2	2	2	2	3	4	3/4	4
Cooling channels IC											
HSC / HPC / MTC / TPC / PPC	HSC	HSC	HSC	HSC	HSC	HSC	HPC	HSC	MTC	HSC	
Coating	TiAlN	TiAlN	(TiAlN)	TiAlN		TiAlN	TiAlN	TiAlN	TiAlN	TiAlN	TiAlN
Type of shank	HA	HA	HA	HA	HA	HA	HA	HA	HA	HB	HA
Secondary application to DIN ISO 513	NMK	MK	NMK	NMK	NMK	MK	MK	MSK	MK	NMK	NMK
Page	454	463	475	475/476	476	476/477	477	483	484	487	492

Garant HOLEX Solid carbide milling cutters for machining steels

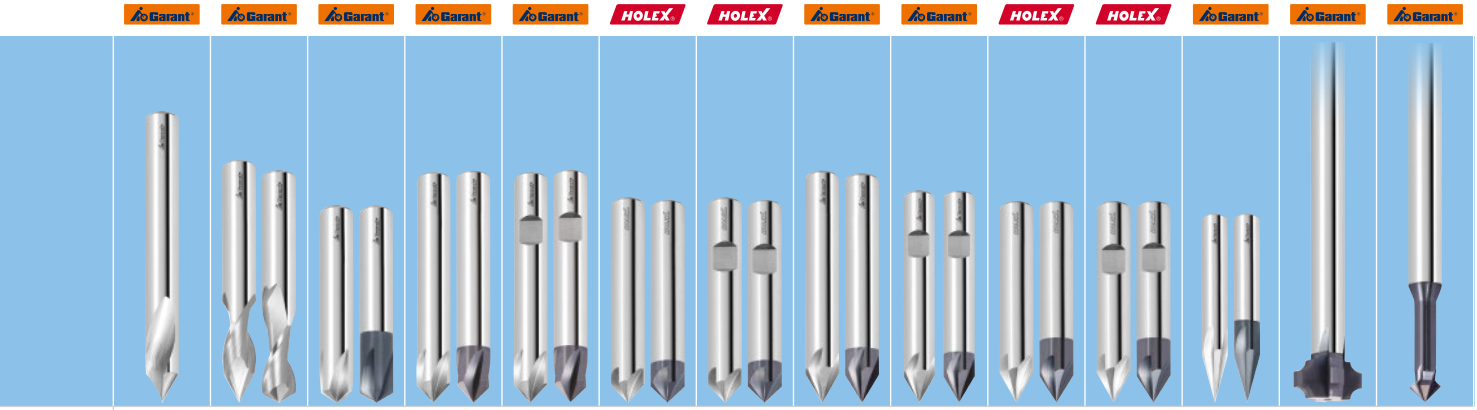
P



	Milling cutters												Roughing end mills
	6527	6527	6527	6527	6527	Man. std	Man. std	Man. std	Man. std	Man. std	Man. std	6527/Man. std	Man. std	6527
	202276 202277	202290– 202294	202296	202305	202298/99 202307	202555 202720/25	202615 202760	202640	202680	202810 202815	202820 202825	203510- 203612	203617– 203620	205486 205492
	N	N	N	N	N	N	N	N	N	N	N	N	N	HR
	1 – 20	1 – 20	3 – 20	1 – 20	1 – 20	2 – 25	2 – 20	2 – 25	2 – 16	4 – 20	3 – 20	2 – 25	3 – 25	4 – 25
	3 – 38	3 – 38	8 – 38	3 – 26	3 – 38	3 – 50	3 – 41	8 – 50	8 – 35	16 – 60	16 – 80	6.5 – 80	6 – 92	8 – 45
	3	3	3	3	3	4	4	4	4	4	4	6/8	6	3/4/5
	HSC	HSC	HSC	HSC	HSC	HSC	HSC	HSC	HSC	HSC	HSC	HSC	HSC	HPC
		AlCrN	AlCrN	AlCrN		TiAlN	TiAlN			(TiAlN)	(TiAlN)	(TiAlN)	(TiAlN)	(TiAlN)
	HA/HB	HA/HB	HB	HA/HB	HA/HB	HA/HB	HA/HB	HA/HB	HA/HB	HA/HB	HA/HB	HA/HB	HA	HB
	NMK	NMK	NMK	NMK	NMK	NMK	NMK	NMK	NMK	NMK	NMK	NMK	H	NMK
	404	405	405	406	406	413/414	413/414	413	413	415	415	435	436	445

Garant HOLEX Solid carbide milling cutters for machining steels

P



	Special mills												
	Man. std	Man. std	Man. std	Man. std	Man. std	Man. std	Man. std	Man. std	Man. std	Man. std	Man. std	Man. std	Man. std	Man. std
	208040	208065 208070/80	208090 208092	208095 208105	208110 208120	208097 208107	208111 208121	208125 208135	208140 208160	208127 208137	208141 208161	208150 208152	208170	208180
	N	N	N	N	N	N	N	N	N	N	N	N	N	N
	Engraving 60°	60°/ 90°/ 120°	120°	90°	90°	90°	90°	60°	60°	60°	60°	30°		
	3 – 6	3 – 20	1 – 16	1 – 16	6 – 16	1 – 16	6 – 12	1 – 16	6 – 16	1 – 16	6 – 12	1 – 16	0.2 – 2.5	3 – 12
	15 – 20	8 – 38											0.2 – 2.5	
	1	2	3/4	3/4	4	3/4	4	3/4	4	3/4	4	3/4	4	4
			(TiAlN)	(TiAlN)	(TiAlN)	(TiAlN)	(TiAlN)	(TiAlN)	(TiAlN)	(TiAlN)	(TiAlN)	(TiAlN)	TiAlN	TiAlN
	HA	HA	HA	HA	HB	HA	HB	HA	HB	HA	HB	HA	HA	HA
	NMK	NMK	NMK	NMK	NMK	NMK	NMK	NMK	NMK	NMK	NMK	NMK	NMK	NMK
	495	495	496	496	497	496	497	497	498	497	498	498	500	500

Garant HOLEX Solid carbide milling cutter for machining hardened steels

H

Milling cutter type	Milling cutters												Torus cutters
DIN >	Man. std	6527	Man. std	Man. std	Man. std	Man. std	Man. std	Man. std	6527/man.std	Man. std	6527/man.std	Man. std	Man. std
	Diabolo	Diabolo	Diabolo 70					without/with chip separators	Diabolo	Diabolo		Diabolo 70	Diabolo
Hoffmann Group Code													
Item number	201631	201639	201648	202976 202977	202978 202982	202979	202981	203077 203079	203211 203282	203372 203382	203246 203248	203212 203373	206155– 206159
Milling cutter type	H	H	H	H	H	H	H	H	H	H	H	H	H
Application recommendation													
Size range (Ø mm)	0,1 – 3	0,5 – 20	0,5 – 6	4 – 20	4 – 20	4 – 20	4 – 20	6 – 20	2 – 20	6 – 25	5 – 20	2 – 20	0,2 – 3
Cutting edge length (mm)	0,15 – 4,6	1,5 – 38	1,3 – 15	8 – 41	16 – 60	11 – 41	16 – 60	18 – 60	8 – 60	16 – 75	13 – 60	6 – 66	0,2 – 4,5
Number of cutting edges	2	2	2	4	4	4	4	5	4 – 10	6 – 10	6	4/6	2
Cooling channels IC													
HSC / HPC / MTC / TPC / PPC	HSC	HPC	HPC	MTC (TPC)	MTC (TPC)	MTC / TPC	MTC / TPC	TPC	HPC	HPC		HPC / TPC	HSC
Coating	TiAlN	TiAlN	TiAlN	TiAlN	TiAlN	TiAlN	TiAlN	TiAlN	TiAlN	TiAlN	TiAlN	TiAlN	TiAlN
Type of shank	HA	HA	HA	HB	HB	HA	HA	HB	HA	HA	HA	HA	HA
Secondary application to DIN ISO 513	P			P	P	P	P				P		P
Page	388/389	390	390	416	416	416	416	427	437	437	438	438	455/456

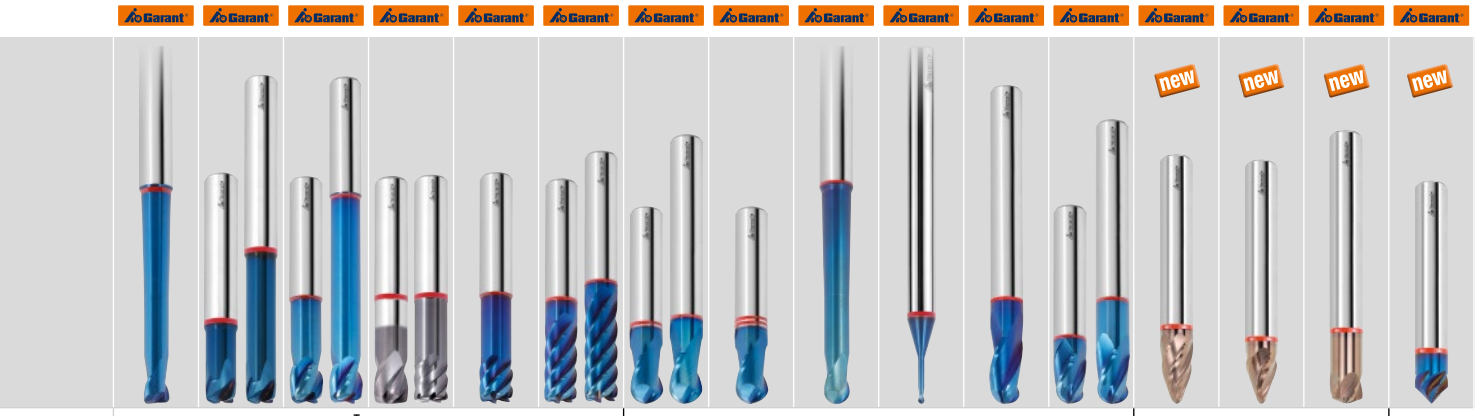
Garant HOLEX Solid carbide milling cutter for machining high-alloy steels

M

Milling cutter type	Milling cutters												
DIN >	6527	6527/man.std	Man. std	Man. std	Man.std/6527	Man. std	6527/man.std	6527	6527	6527/man.std	6527	Man. std	Man. std
	(GARANT Master INOX)	GARANT Master INOX	HOLEX Pro INOX	GARANT Master INOX M		GARANT Master INOX M	GARANT Master INOX	GARANT Master INOX	GARANT Master INOX			HOLEX Pro INOX	
Hoffmann Group Code													
Item number	201644 201647	202387 202389	202378 202382	202986	202993 203003	202989	202998 203006/07/11	202997	202999	202995 203014/17	203016	203013/15 203021/27	203023 203024/26
Milling cutter type	N	N	N	N	N	N	N	N	N	N	N	N	N
Application recommendation													
Size range (Ø mm)	1 – 20	1 – 20	3 – 20	3 – 20	4 – 25	3 – 25	3 – 25	3 – 20	4 – 20	3 – 20	4 – 20	3 – 20	6 – 20
Cutting edge length (mm)	3 – 38	2.5 – 60	8 – 60	5 – 26	8 – 45	8 – 60	5 – 60	8 – 38	11 – 38	5 – 60	11 – 41	5 – 60	32 – 102
Number of cutting edges	2	3	3	4	4	4	4	4	4	4	4	4	4
Cooling channels IC									IC	– / – / IC	IC	– / IC	
HSC / HPC / MTC / TPC / PPC	HPC	HPC	HPC	HPC	HPC	HPC	HPC (TPC)	HPC / TPC	HPC/TPC	HPC	HPC	HPC	HPC (TPC)
Coating	TiAlN	TiAlN	AlCrN	TiAlN	AlCrN/TiAlN	TiAlN	TiAlN	TiAlN	TiAlN	TiSi	TiAlN	AlCrN	TiAlN
Type of shank	HA	HB	HB	HB	HB	HB	HB	HB	HB	HB	HB	HB	HB
Secondary application to DIN ISO 513	P	P	P	P	P	P	P	P	P	P	PS	P	PS
Page	391	407	407	417	417	417	418	418	418	419	419	420	421

Garant HOLEX Solid carbide milling cutter for machining hardened steels

H



	Torus cutters						Ball nose slot drills						PPC milling cutters			Special mills
	Man. std	Man. std	Man. std	Man. std	Man. std	6527	Man. std	Man. std	Man. std	Man. std	Man. std	Man. std	Man. std	Man. std	Man. std	Man. std
	Diabolo	Diabolo	Diabolo	Diabolo 70	Diabolo	Diabolo	Diabolo	Diabolo high precision	Diabolo	Diabolo	Diabolo	Diabolo	tangential	conical	stub/ conical	Diabolo
	206162	206273 206275	206322 206342	206323 206324	206372	206422 206442	207342 207362	207347	207372	207373	207424	207472 207476	207523	207540 207541/44	207551 207553	208158
	H	H	H	H	H	H	H	H	H	H	H	H	N	N	N	H
	0.8 – 12	2 – 16	1 – 16	2 – 12	6 – 16	6 – 20	0.1 – 20	0.1 – 6	0.6 – 12	0.1 – 3	3 – 12	2 – 20	6 – 12	6 – 16	12	6 – 16
	1 – 8	1.5 – 8.8	1.5 – 16	2 – 12	7 – 16	16 – 60	0.2 – 26	0.1 – 6	0.8 – 11	0.08 – 3.5	8 – 22	4 – 26	14 – 18.5	8.5 – 16	1.7 – 2.5	
	2	2/4	4	4/6	6	6 -10	2	2	2	2	3	4	4/6	4/6	5	6
	HSC / HPC	HPC	HPC	HPC	HPC	HPC	HSC / HPC	HSC / HPC	HSC / HPC	HSC	HSC / HPC	HSC / HPC	PPC	PPC	PPC	
	TiAlN	TiAlN	TiAlN	TiAlN	TiAlN	TiAlN	TiAlN	TiAlN	TiAlN	TiAlN	TiAlN	TiAlN	TiAlN	TiAlN	TiAlN	TiAlN
	HA	HA	HA	HA	HA	HA	HA	HA	HA	HA	HA	HA	HA	HA	HA	HA
										P						
	457	461	464	466	471	471	478	478	479	480/481	483	484	489	490	491	499

Garant HOLEX Solid carbide milling cutter for machining high-alloy steels

M

	Milling cutters						Roughing end mills			Torus cutters				Ball nose slot drills		PPC milling cutters
	Man. std	Man. std	Man. std	Man. std	Man. std	Man. std	6527 GARANT Master INOX M	6527 GARANT Master INOX M	6527	Man. std GARANT Master INOX	Man. std HOLEX Pro INOX	6527	Man. std	Man. std GARANT Master INOX	Man. std	Man. std conical
	203019	203102	203103 203106	203104 203107	203105 203108	203101	205448	205450	205712	206345 206347	206348	206351	206353	207473 207474	207477 207478	207535 207537/39
	N	N	N	N	N	N	NR	NR	HR	N	N	N	N	N	N	N
	4 – 20	4 – 20	4 – 20	5 – 20	8 – 20	4 – 20	4 – 20	4 – 20	6 – 20	3 – 20	4 – 20	4 – 20	4 – 20	2 – 20	2 – 20	12 – 16
	16 – 60	11 – 41	16 – 60	20 – 80	40 – 100	16 – 60	8 – 26	11 – 38	12 – 40	8 – 38	11 – 41	12 – 38	11 – 41	4 – 26	4 – 26	12,5 – 22
	5	7	7	7	7	5	4/5	4/5	4/5	4	4	4	4	4	4	6
	TPC	TPC	TPC	TPC	TPC	TPC	HPC	HPC	MTC	HPC	HPC	HPC	HPC	HPC	HPC	PPC
	TiAlN	TiAlN	TiAlN	TiAlN	TiAlN	TiAlN	TiAlN	TiAlN	TiAlN	TiAlN	AlCrN	TiAlN	TiSi	TiAlN	TiAlN	TiAlN
	HB	HB	HB	HB	HB	HB	HB	HB	HB	HA/HB	HB	HA	HB	HA	HA	HA
	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	NS
	425	431	431/432	431/432	431/432	432	444	444	449	467	467	468	468	485	485	490

Garant Solid carbide milling cutters for machining titanium and superalloys

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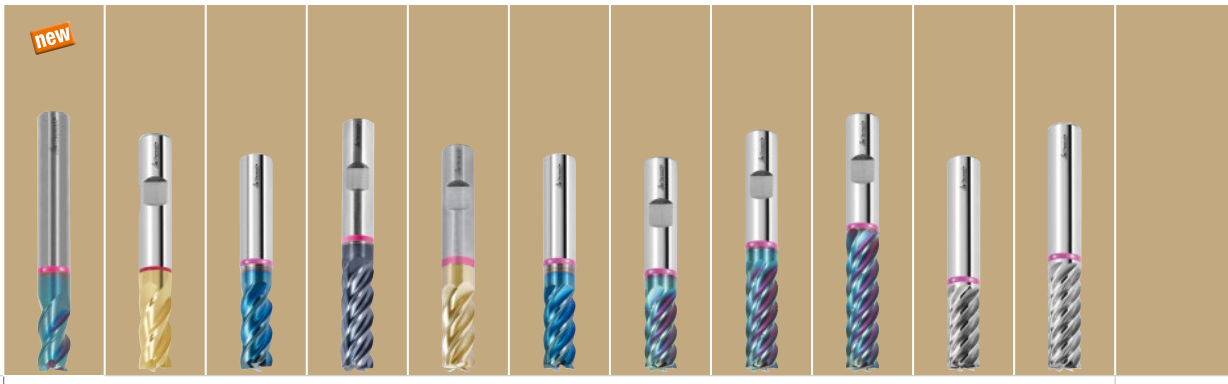

Milling cutter type	Milling cutters										
DIN >	Man. std	6527	6527	Man. std	6527	6527	Man. std	Man. std	Man. std	Man. std	Man. std
	GARANT Master Titan		GARANT Master Titan			GARANT Master Titan	GARANT Master Titan	GARANT Master Titan	GARANT Master Titan	GARANT Master Titan	GARANT Master Titan
Hoffmann-Group Code											
Item number	202287	203028	203029	203083	203082	203157	203122	203123	203124	203632	203633
Milling cutter type	N	N	N	N	N	N	N	N	N	N	N
Application recommendation											
Size range (Ø mm)	0.2 – 12	4 – 20	3 – 20	6 – 20	3 – 20	4 – 20	4 – 20	4 – 20	5 – 20	4 – 20	4 – 20
Cutting edge length (mm)	0.6 – 16	11 – 41	8 – 41	18 – 60	8 – 41	11 – 41	11 – 41	16 – 60	20 – 80	11 – 41	16 – 60
Number of cutting edges	2-4	4	4	5	5	5	6	6	6	7	7
Cooling channels IC											
HSC / HPC / MTC / TPC / PPC	HPC	HPC / TPC	HPC	TPC	MTC / TPC	HPC / TPC	TPC	TPC	TPC	HPC	HPC
Coating	TiAlN	TiAlN	TiAlN	TiAlN	TiAlN	TiAlN	TiAlN	TiAlN	TiAlN		
Type of shank	HA	HB	HA	HB	HB	HA	HB	HB	HB	HA	HA
Secondary application to DIN ISO 513										N	N
Page	402	421	421	427	428	428	433	433	433	439	439

Garant HOLEX Solid carbide milling cutters for general-purpose machining

P M K

Milling cutter type	Milling cutters												
DIN >	Man. std	6527	Man. std	Man. std	6527	6527	Man. std	6527/Man. std	6527	6527	Man. std	Man. std	Man. std
	GARANT Master Steel		GARANT Master Steel	GARANT Master Steel					GARANT Master Steel PickPocket	GARANT Master Steel PickPocket	GARANT Master Steel PickPocket	HOLEX Pro Steel	HOLEX Pro Steel
Hoffmann-Group Code													
Item number	201646	201650	202289	202295	202391	202396	202399	202392 202394	202402	202404	202406	202414	202416
Milling cutter type	N	N	N	N	N	N	N	N	N	N	N	N	N
Application recommendation													
Size range (Ø mm)	1 – 20	3 – 20	0.2 – 16	0.8 – 16	1.5 – 12	1 – 20	4 – 20	1 – 20	3.8 – 20	3.8 – 20	5.7 – 20	3 – 20	5 – 20
Cutting edge length (mm)	3 – 32	8 – 38	0.6 – 18	2 – 18	3 – 16	2.5 – 38	16 – 60	2.5 – 60	5 – 20	10 – 41	13 – 41	8 – 38	13 – 38
Number of cutting edges	2	2	3	3	3	3	3	3	3	3	3	3	3
Cooling channels IC													
HSC / HPC / MTC / TPC / PPC	HPC		HPC	HPC	MTC	MTC	MTC	MTC	HPC	HPC	HPC	HPC	HPC
Coating	TiAlN	TiAlN	TiAlN	TiAlN	AlCrN	AlCrN	AlCrN	SiTiN	TiAlN	TiAlN	TiAlN	TiAlN	TiAlN
Type of shank	HA	HA	HA	HA	HA	HB	HB	HB	HB	HB	HB	HB	HB
Secondary application to DIN ISO 513	MK	NPMK	NPMK	NPMK	PMK	PMK	PMK	PMK	PMK	PMK	PMK	PMK	PMK
Page	391	391	402	402	408	408	408	408	409	409	409	410	410

Garant Solid carbide milling cutters for machining titanium and superalloys

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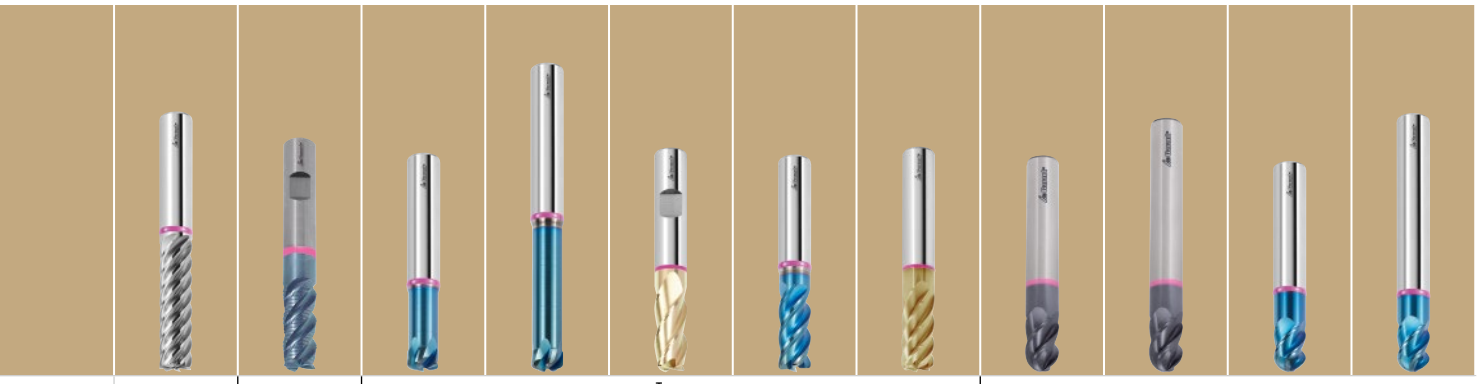
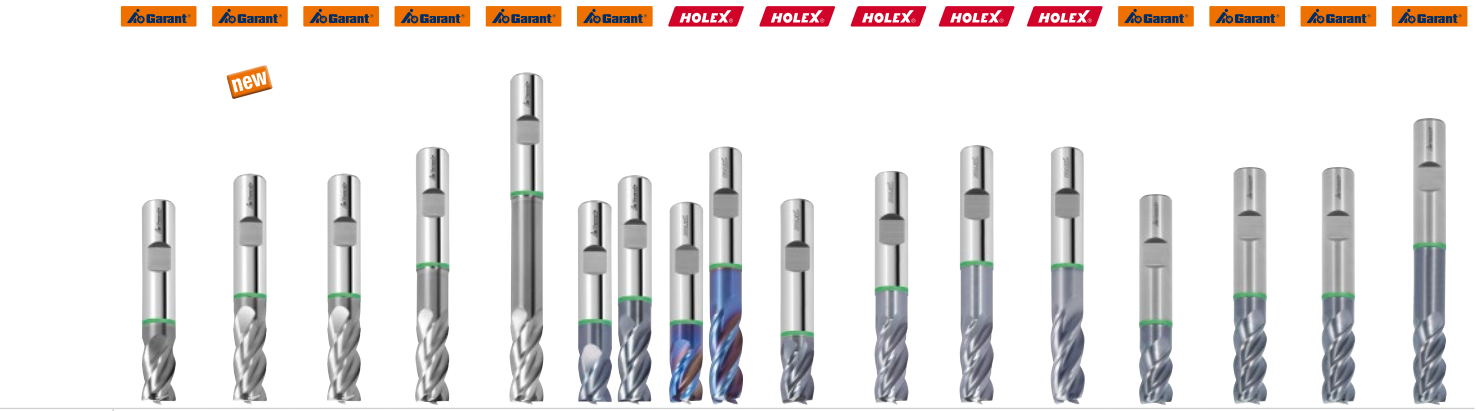


	Milling cutters	Roughing end mills	Torus cutters					Ball nose slot drills			
	Man. std	6527	Man. std	Man. std	6527	6527	6527	Man. std	Man. std	Man. std	Man. std
	GARANT Master Titan		GARANT Master Titan	GARANT Master Titan		GARANT Master Titan				GARANT Master Titan	GARANT Master Titan
	203634	205711	206286	206288	206358	206364	206510	207480	207485	207482	207487
	N	HR	N	N	N	N	N	N	N	N	N
	6 – 20	6 – 25	2 – 12	2 – 12	4 – 20	4 – 20	6 – 20	2 – 12	2 – 12	1 – 12	1 – 12
	24 – 80	12 – 50	1.5 – 6.8	1.5 – 6.8	11 – 41	11 – 41	16 – 41	4 – 16	4 – 16	2 – 16	2 – 16
	7	4/5	2/4/5	2/4/5	4	4	6/8	4	4	4	4
	HPC	MTC	HPC	HPC	HPC	HPC	HPC	HPC	HPC	HPC	HPC
		TiAlN	TiAlN	TiAlN	TiAlN	TiAlN	TiAlN	TiAlN	TiAlN	TiAlN	TiAlN
	HA	HB	HA	HA	HB	HA	HA	HA	HA	HA	HA
	N	PK									
	439	449	461	461	469	469	469	486	486	486	486

Garant HOLEX Solid carbide milling cutters for general-purpose machining

P M K



	Milling cutters														
	6527	6527	6527	Man. std	Man. std	6527	6527/Man. std	6527	Man. std	Man. std	Man. std	Man. std	Man. std	Man. std	Man. std
	GARANT Master Steel	GARANT Master Steel	GARANT Master Steel	GARANT Master Steel	GARANT Master Steel			HOLEX Pro Steel	HOLEX Pro Steel	HOLEX Pro Steel	HOLEX Pro Steel				
	203034	203039	203035	203036	203038	203031 203041	203037 203044/47	203052	203054	203056	203058	203051	203061	203076	203071
	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
	3 – 20	6 – 25	3 – 25	6 – 20	6 – 20	3 – 25	3 – 25	3 – 20	3 – 25	5 – 20	5 – 20	3 – 20	3 – 20	4 – 20	6 – 20
	6 – 26	13 – 68	8 – 68	13 – 41	13 – 41	6 – 68	8 – 68	6 – 26	8 – 45	13 – 38	18 – 60	5 – 26	8 – 41	11 – 41	13 – 41
	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
														IC	
	HPC	HPC	HPC	HPC	HPC	HPC	HPC	HPC	HPC	HPC	HPC	MTC	MTC	MTC	MTC
	TiAlN	TiAlN	TiAlN	TiAlN	TiAlN	TiAlN	TiXSi	TiAlN	TiAlN	TiAlN	TiAlN	AlCrN	AlCrN	AlCrN	AlCrN
	HB	HB	HB	HB	HB	HB	HB	HB	HB	HB	HB	HB	HB	HB	HB
	PMK	PMK	PMK	PMK	PMK	PMK	PMK	PMK	PMK	PMK	PMK	PMK	PMK	PMK	PMK
	422	422	422	422	422	423	423/424	424	424	424	424	425	425	425	425

Garant HOLEX Solid carbide milling cutters for general-purpose machining P M K

Milling cutter type	Milling cutters												
DIN >	Man. std	Man. std	Man. std	Man. std	Man. std	Man. std	Man. std	6527	Man. std	Man. std	Man. std	Man. std	Man. std
	with chip splitters	with chip splitters	with chip splitters	with chip splitters	with chip splitters	HOLEX Pro Steel	HOLEX Pro Steel		high precision	GARANT Master Steel	GARANT Master Steel	GARANT Master Steel	GARANT Master Steel
Hoffmann-Group Code													
Item number	203088	203089 203092	203090 203093	203091 203094	203095	203623	203624	203440 203480	203530 203540	204012	204014 204015	204016	204018 204019
Milling cutter type	N	N	N	N	N	N	N	N	N	N	N	N	N
Application recommendation													
Size range (∅ mm)	4 – 20	4 – 20	5 – 20	8 – 20	4 – 20	4 – 20	6 – 20	5 – 20	6 – 25	4 – 20	4 – 20	6 – 20	8 – 20
Cutting edge length (mm)	11 – 41	16 – 60	20 – 80	40 – 100	16 – 60	16 – 60	24 – 80	13 – 38	13 – 105	11 – 41	16 – 60	24 – 80	40 – 100
Number of cutting edges	5	5	5	5	5	6	6	6/8	6/8	7	7	7	7
Cooling channels IC													
HSC / HPC / MTC / TPC / PPC	TPC	TPC	TPC	TPC	TPC	HPC	HPC	HSC	HSC	HPC	HPC	HPC	HPC
Coating	TiAlN	TiAlN	TiAlN	TiAlN	TiAlN	TiAlN	TiAlN	TiAlN	TiAlN	TiAlN	TiAlN	TiAlN	TiAlN
Type of shank	HB	HB	HB	HB	HB	HA	HA	HA/HB	HA	HA	HA	HA	HA
Secondary application to DIN ISO 513	PMK	PMK	PMK	PMK	PMK	PMK	PMK	NPMK	PMK	PMK	PMK	PMK	PMK
Page	429	429/430	429/430	429/430	430	436	436	440	440	441	441	441	441

Garant HOLEX Solid carbide milling cutters for general-purpose machining P M K

Milling cutter type	Torus cutters							Ball nose slot drills				
DIN >	Man. std	Man. std	Man. std	Man. std	Man. std	6527/Man. std	6527	Man. std	Man. std	Man. std	Man. std	Man. std
				GARANT Master Steel	GARANT Master Steel	GARANT Master Steel	HOLEX Pro Steel	GARANT Master Steel	GARANT Master Steel	GARANT Master Steel	GARANT Master Steel	GARANT Master Steel
Hoffmann-Group Code												
Item number	206266 206267	206262	206263	206333	206335	206354 206359	206357	207242	207244	207246	207490	207492
Milling cutter type	N	N	N	H	H	N	N	N	N	N	N	N
Application recommendation												
Size range (∅ mm)	2 – 16	2 – 12	4 – 12	1 – 12	2 – 16	4 – 20	4 – 20	0.1 – 20	1 – 16	3 – 12	2 – 20	3 – 16
Cutting edge length (mm)	1.5 – 8.8	1.5 – 6.8	2.5 – 6.8	1.5 – 12	2.5 – 16	11 – 41	11 – 38	0.2 – 26	2 – 22	5 – 16	4 – 26	5 – 22
Number of cutting edges	2/4	3/5/6	3/5/6	4/5	4/5/6	4	4	2	2	2	4	4
Cooling channels IC												
HSC / HPC / MTC / TPC / PPC	HPC	HPC	HPC	HPC	HPC	HPC	HPC	HPC	HPC	HPC	HPC	HPC
Coating	TiAlN	TiAlN	TiAlN	TiAlN	TiAlN	TiAlN	TiAlN	TiAlN	TiAlN	TiAlN	TiAlN	TiAlN
Type of shank	HA	HA	HA	HA	HA	HB	HB	HA	HA	HA	HA	HA
Secondary application to DIN ISO 513	PM	PM	PM	PMK	PMK	PMK	PMK	PMK	PMK	PMK	PMK	PMK
Page	462	462	462	465	465	470	470	482	482	482	487	487

Garant HOLEX Solid carbide milling cutters for general-purpose machining

P M K

Roughing end mills

6527	6527	6527	6527	6527	6527	Man. std	Man. std	Man. std	Man. std	6527	6527	6527	6527	Man. std
			GARANT Master Steel SlotMachine	GARANT Master Steel SlotMachine	GARANT Master Steel SlotMachine	GARANT Master Steel SlotMachine	GARANT Master Steel SlotMachine	GARANT Master Steel SlotMachine	GARANT Master Steel SlotMachine		HOLEX Pro Steel	HOLEX Pro Steel		
205482 205490	205488 205592	205710	205548	205550	205551	205552	205556	205554	205555	205714 205716	205704	205706	205715	205718
HR	HR	HR	NR	NR	NR	NR	NR	NR	NR	HR	HR	HR	HR	HR
4 – 25	8 – 20	6 – 20	4 – 20	4 – 20	4 – 20	5 – 20	6 – 20	5 – 20	6 – 20	6 – 25	4 – 20	4 – 20	6 – 25	6 – 20
8 – 45	11 – 38	8 – 20	8 – 26	11 – 38	11 – 38	13 – 41	13 – 41	17 – 60	24 – 80	12 – 50	6 – 26	11 – 38	13 – 50	12 – 40
3/4/5	3/4	4/5	5	5	5	5	5	5	5	4/5	4/5/6	4/5/6	4/5/6	4/5
	IC				IC					– / IC				
HPC	HPC	MTC	HPC	HPC	HPC	HPC	HPC	HPC/TPC	HPC/TPC	MTC	HPC	HPC	MTC	MTC
TiAlN	TiAlN	TiAlN	TiAlN	TiAlN	TiAlN	TiAlN	TiAlN	TiAlN	TiAlN	TiAlN	TiAlN	TiAlN	TiAlN	TiAlN
HB	HB	HB	HB	HB	HB	HB	HB	HB	HB	HB	HB	HB	HB	HB
NPMK	NPMK	PMSK	PMK	PMK	PMK	PMK	PMK	PMK	PMK	PMK	PMK	PMK	PMK	PMK
445	446	446	447	447	447	448	448	448	448	449	450	450	450	450

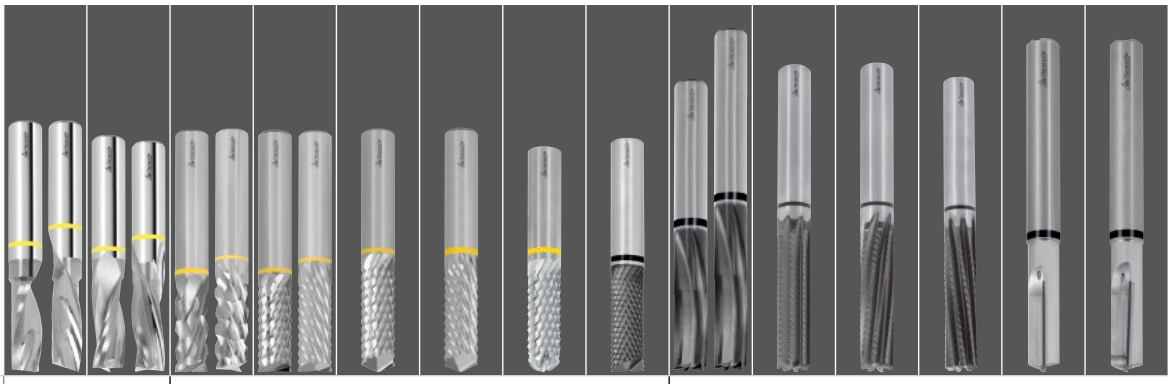
Garant HOLEX Solid carbide milling cutters for general-purpose machining

P M K

PPC milling cutters | Special mills

Man. std	Man. std	Man. std	Man. std	Man. std	850 D/F	851	1833	1833	Man. std	Man. std	Man. std	Man. std	Man. std
tangential	conical	stub/ conical	straight										
207525	207530– 207534	207543– 207549	207520	208021 208023	208025	208032 208034	208035 208037	208036 208038	208156	208162 208164	208166 208168	208172	208185
N	N	N	N	N	N/NF	N/NF	N	N	N	N	N	N	N
							45° / 60°	45° / 60°	90°	90°	60°		
6 – 12	6 – 16	8 – 12	10 – 12	0.2 – 10	10.5 – 45.5	12.5 – 32	12 – 38	12 – 38	6 – 16	6 – 20	6 – 20	0.2 – 2.5	7.8 – 12
20.5 – 27	8 – 22	1.4 – 3.5	21.5 – 23										
4	4	3/5	5	3/4/5/6	6/8/10	6	6/8/9	6/8/10	4	6/8	6/8	5	5
PPC	PPC	PPC	PPC	HPC									
TiAlN	TiAlN	TiAlN	TiAlN	TiAlN	TiAlN	TiAlN	TiAlN	TiAlN	TiAlN	(TiAlN)	(TiAlN)	TiAlN	TiAlN
HA	HA	HA	HA	HA	HB	HB	HB	HB	HA	HB	HB	HA	HA
NPMK	NPMK	NPMK	NPMK	NPM	PM	P	P	P	NPMK	NPMK	NPMK	NPMK	NPMK
489	490	491	491	492	493	493/494	494	494	499	499	499	500	500

Garant Solid carbide milling cutters for machining non-metallic materials



Milling cutter type	Milling cutters		Router						Milling cutters					
DIN >	Man. std	Man. std	Man. std	Man. std	Man. std	Man. std	Man. std	Man. std	Man. std	Man. std	Man. std	Man. std	Man. std	Man. std
			coarse	medium	medium /135°	medium /135°	medium	fine		straight cut	dragging cut	compacting cut	straight cut	dragging cut
Hoffmann-Group Code														
Item number	209300 209305	209320 209322	209410 209420	209415 209425	209435	209445	209460	209512	209515 209517	209525	209527	209535	209610	209615
Milling cutter type	W	W	W	W	W	W	W							
Application recommendation														
Size range (Ø mm)	1.5 – 12	4 – 20	4 – 20	4 – 20	4 – 20	4 – 10	4 – 20	4 – 20	6 – 12	4 – 20	4 – 20	4 – 20	3 – 16	3 – 16
Cutting edge length (mm)	6 – 30	13 – 41	16 – 45	16 – 45	16 – 45	16 – 25	19 – 55	16 – 45	16 – 36	16 – 45	16 – 45	16 – 45	2.5 – 20	2.5 – 20
Number of cutting edges	1	2/3							4/6	8	8	8	2	2
Cooling channels IC													IC	IC
HSC / HPC / MTC / TPC / PPC														
Coating								Diamond					PCD	PCD
Type of shank	HA	HA	HA	HA	HA	HA	HA	HA	HA	HA	HA	HA	HA	HA
Secondary application to DIN ISO 513	N	N											N	N
Page	501	501	502	502	502	502	503	503	504	504	504	504	505	505

Garant Solid carbide milling cutters for machining non-metallic materials

Milling cutter type	Milling cutters	Torus cutters	Ball nose slot drills	Milling cutters			Torus cutters				Ball nose slot drills			
DIN >	Man. std	Man. std	Man. std	Man. std	Man. std	Man. std	Man. std	Man. std	Man. std	Man. std	Man. std	Man. std	Man. std	Man. std
	compacting cut	straight cut	straight cut	Micro precision			Micro precision							Micro precision
Hoffmann-Group Code														
Item number	209620	209635	209655	209700	209711	209713	209714– 209731	209750	209755/ 209758	209760	209776/ 209781	209783	209785	209791
Milling cutter type														
Application recommendation														
Size range (Ø mm)	3 – 16	3 – 10	3 – 16	0.1 – 3	3 – 20	6 – 20	0.2 – 3	1 – 10	3 – 12	4 – 12	1 – 20	4 – 10	1 – 12	0.2 – 3
Cutting edge length (mm)	2.5 – 20	2.5 – 8	2.5 – 10	0.15 – 4.5	8 – 38	13 – 38	0.2 – 4.5	1.2 – 6	4 – 12	5 – 12	2 – 26	8 – 14	1.2 – 11	0.16 – 3.5
Number of cutting edges	2	2	2	2	2	4	2	2	4	4	2	2	2	2
Cooling channels IC	IC	IC	IC											
HSC / HPC / MTC / TPC / PPC														
Coating	PCD	PCD	PCD	Diamond			Diamond				Diamond			
Type of shank	HA	HA	HA	HA	HA	HA	HA	HA	HA	HA	HA	HA	HA	HA
Secondary application to DIN ISO 513	N	N	N											
Page	505	505	506	506/507	508	508	509/510	511	511	512	512	513	513	514/515

Solid carbide | Standard | Type W | h10 | 1 | 26° | h6 DIN 6535 HA

Garant

Solid carbide slot drill

Large flute section for unobstructed swarf evacuation.
Special geometry for aluminium machining.
20 1045/1046 – With the latest generation of **DLC coating sp²**.
Application: Especially for milling **aluminium, plunging** and **contour milling.**

20 1040

20 1043

20 1045

20 1046

Suitable for/ v_c [m/min]	Alu	Alu	Alu cast > 10 % Si	PMMA acrylic	PE-HD	PA 66	PEEK	PF 31	AFRP aramid	PVDF GF20	POM GF25	PA 66 GF30	PEEK GF30	PTFE CF25	PEEK CF30	Honey-comb sandwich	Cu	CuZn					
ISO code	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N					
20 1040	**180**	**140**	**105**	**180**	**130**	**150**	**130**	**110**								180	**140**	**180**		●	○	○	○
20 1043	**170**	**125**	**100**	**170**	**120**	**140**	**120**	**100**								170	**130**	**160**		●	○	○	○
20 1045	**480**	**440**	**400**	**200**	**160**	**200**	**150**	**130**		**180**	**160**	**150**	**130**	**160**		300	**160**	**200**		●	○	○	●
20 1046	**440**	**400**	**360**	**180**	**150**	**180**	**140**	**120**		**170**	**150**	**140**	**120**	**150**		280	**150**	**190**		●	○	○	●

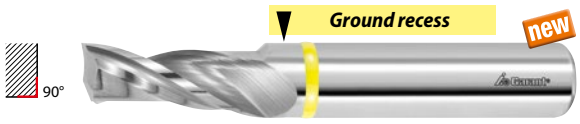
Ø h10 D_c	11X 20 1040	11X 20 1043	L_s		L_{tot}			Alu f_z
	Solid carbide slot drill		20 1040	20 1043	20 1040	20 1043		
mm			mm	mm	mm	mm	mm	mm
1	–	XXX	–	8	–	75	3	0.004
1,5	XXX	XXX	6	12	50	75	3	0.004
2	XXX	XXX	8	18	50	75	3	0.008
3	XXX	XXX	12	22	50	75	3	0.008
4	XXX	XXX	15	25	60	75	4	0.015
5	XXX	XXX	17	25	60	75	5	0.015
6	XXX	XXX	20	30	65	100	6	0.025
8	XXX	XXX	22	35	64	100	8	0.03
10	XXX	XXX	25	40	75	100	10	0.04
12	XXX	XXX	30	45	80	120	12	0.05

Ø h10 D_c	11X 20 1045	11X 20 1046	L_s		L_{tot}			Alu f_z
	Solid carbide slot drill		20 1045	20 1046	20 1045	20 1046		
mm	DLC	DLC	mm	mm	mm	mm	mm	mm
1	XXX	XXX	4	8	50	75	3	0.004
1,5	XXX	XXX	6	12	50	75	3	0.004
2	XXX	XXX	8	18	50	75	3	0.008
3	XXX	XXX	12	22	50	75	3	0.008
4	XXX	XXX	15	25	60	75	4	0.015
5	XXX	XXX	17	25	60	75	5	0.015
6	XXX	XXX	20	30	65	100	6	0.025
8	XXX	XXX	22	35	64	100	8	0.03
10	XXX	XXX	25	40	75	100	10	0.04
12	XXX	XXX	30	45	80	120	12	0.05

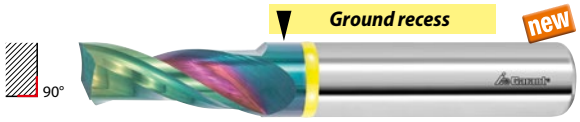
Solid carbide | Standard | Type W | e8 | 1 | 30° | a_e 0.5×D | h6 DIN 6535 HA | G 1,8 n_{max} | HPC

GARANT Master Alu HPC solid carbide slot drill

Precision balanced tools, ideally suited for use on **high-speed spindles.**
Special geometry for optimum chip evacuation thanks to **newly developed balancing process.**
Very smooth cutting action for **outstanding surface quality.**



20 1070



20 1075

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	PMMA acrylic	PE-HD	PA 66	PEEK	PF 31	AFRP aramid	PVDF GF20	POM GF25	PA 66 GF30	PEEK GF30	PTFE CF25	PEEK CF30	Honey-comb sandwich	Cu	CuZn					
ISO code	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N					
20 1070	180	140	105	180	130	150	130	110								180	140	180		●	○	○	○
20 1075	480	440	400	200	160	200	150	130		180	160	150	130	160		300	160	200		●	○	○	●

Ø f8 D_c / RS_1	11Z 20 1070	11Z 20 1075	L_s	L_4	Ø D_4	L_{tot}		Alu f_z	Alu f_z
	GARANT Master Alu solid carbide slot drill HPC								
mm		DLC	mm	mm	mm	mm	mm	mm	mm
2M	(XXX)	(XXX)	5	–	–	50	6	0.02	0.04
2L	(XXX)	(XXX)	11	–	–	50	6	0.02	0.04
3M	(XXX)	(XXX)	6	9	2.8	50	6	0.03	0.05
3L	(XXX)	(XXX)	12	16	2.8	50	6	0.03	0.05
4M	(XXX)	(XXX)	10	16	3.8	50	6	0.04	0.06
4L	(XXX)	(XXX)	16	21	3.8	55	6	0.04	0.06
5E	(XXX)	(XXX)	9	14	4.8	50	6	0.05	0.07
5M	(XXX)	(XXX)	16	21	4.8	55	6	0.05	0.07
6E	(XXX)	(XXX)	11	17	5.5	50	6	0.06	0.08
6L	(XXX)	(XXX)	16	24	5.5	50	6	0.06	0.08
6X	(XXX)	(XXX)	21	27	5.5	55	6	0.06	0.08
8K	(XXX)	(XXX)	8	13	7.4	50	8	0.08	0.1
8D	(XXX)	(XXX)	14	43	7.4	70	8	0.07	0.09
8E	(XXX)	(XXX)	14	26	7.4	60	8	0.08	0.1
8S	(XXX)	(XXX)	21	31	7.4	60	8	0.08	0.1
8T	(XXX)	(XXX)	26	34	7.4	70	8	0.07	0.09
8X	(XXX)	(XXX)	31	43	7.4	70	8	0.07	0.09
10D	(XXX)	(XXX)	10	16	9.2	55	10	0.1	0.12
10E	(XXX)	(XXX)	18	28	9.2	60	10	0.1	0.12
10S	(XXX)	(XXX)	18	52	9.2	80	10	0.08	0.1
10L	(XXX)	(XXX)	26	34	9.2	60	10	0.1	0.12
10M	(XXX)	(XXX)	26	34	9.2	85	10	0.08	0.1
10X	(XXX)	(XXX)	33	43	9.2	70	10	0.09	0.11
12K	(XXX)	(XXX)	12	19	11	60	12	0.12	0.14
12E	(XXX)	(XXX)	21	33	11	70	12	0.1	0.12
12L	(XXX)	(XXX)	32	42	11	70	12	0.1	0.12

GARANT Master Alu solid carbide slot drills HPC

Advantages of precision balanced GARANT Master Alu solid carbide slot drills

- Low-vibration milling, particularly at high speeds.
- Significant lengthening of the machine spindle life cycle.
- Significantly longer working life for the tool.
- Improved surface quality of the workpiece.

Solid carbide | Standard | Type W | 0 −0.005 | 2 | a_e 0.5×D | h5 DIN 6535 HA

25° ≤ 0.8 mm | 30° ≥ 1 mm

Garant Solid carbide micro precision slot drill

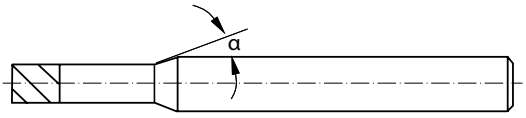
With **advanced DLC sp² coating.** For the **highest demands regarding performance and precision in aluminium materials. Extremely tight tolerances** ensure maximum accuracy. Double relief ground with 2 hollow-ground chamfers. **Recess angle α = 16°.**

Tolerances:

- Neck ∅: **D_4 = 0 / -0.01 mm.**

Note: At greater tool overhang lengths, use a reduced value for a_p!
Values for:
slots milled from solid: $a_p = 0.25 \times D \times a_{p\,korr}$
side milling: $a_p = 0.5 \times D \times a_{p\,korr}$
To calculate the feed rate vf please use the actual speed of the machine (the maximum possible speed)!
e.g: vf = 18000 [rpm]× fz [mm/Z]× z

20 1140



Suitable for/ v_c [m/min]	Alu	Alu	Alu cast > 10 % Si	PMMA acrylic	PE-HD	PA 66	PEEK	PF 31	AFRP aramid	PVDF GF20	POM GF25	PA 66 GF30	PEEK GF30	PTFE CF25	PEEK CF30	Honey-comb sandwich	Cu	CuZn					
ISO code	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N					
20 1140	480	440	400	200	160	200	150	130		180	160	150	130	160		300	160	200		●	●		●

∅D_c×L_4	11X 20 1140 Solid carbide micro slot drill	L_s	L_4	∅ D_4	L_{tot}		Alu cast > 10 % Si f_z	Alu cast > 10 % Si f_z	Correction factor $a_{p\,korr}$
mm	DLC	mm	mm	mm	mm	mm	mm	mm	
0,1×0,3	XXX	0.15	0.3	0.08	45	4	0.008	0.012	1
0,1×0,5	XXX	0.15	0.5	0.08	45	4	0.008	0.012	1
0,1×1	XXX	0.15	1	0.08	45	4	0.005	0.007	0.5
0,2×0,5	XXX	0.3	0.5	0.18	45	4	0.008	0.012	1
0,2×1	XXX	0.3	1	0.18	45	4	0.008	0.012	1
0,2×2	XXX	0.3	2	0.18	45	4	0.005	0.007	0.5
0,2×3	XXX	0.3	3	0.18	45	4	0.005	0.007	0.2
0,3×0,5	XXX	0.4	0.5	0.28	45	4	0.012	0.016	1
0,3×1	XXX	0.4	1	0.28	45	4	0.012	0.016	1
0,3×2	XXX	0.4	2	0.28	45	4	0.012	0.016	0.9
0,3×3	XXX	0.4	3	0.28	45	4	0.008	0.012	0.5
0,3×4	XXX	0.4	4	0.28	45	4	0.008	0.012	0.35
0,3×6	XXX	0.4	6	0.28	45	4	0.005	0.007	0.08
0,4×1	XXX	0.6	1	0.38	45	4	0.012	0.016	1
0,4×2	XXX	0.6	2	0.38	45	4	0.012	0.016	1
0,4×3	XXX	0.6	3	0.38	45	4	0.012	0.016	0.8
0,4×4	XXX	0.6	4	0.38	45	4	0.008	0.012	0.5
0,4×6	XXX	0.6	6	0.38	45	4	0.008	0.012	0.2
0,4×8	XXX	0.6	8	0.38	45	4	0.005	0.007	0.08
0,5×1	XXX	0.7	1	0.48	45	4	0.016	0.02	1
0,5×2	XXX	0.7	2	0.48	45	4	0.016	0.02	1
0,5×3	XXX	0.7	3	0.48	45	4	0.016	0.02	0.9
0,5×4	XXX	0.7	4	0.48	45	4	0.016	0.02	0.8
0,5×6	XXX	0.7	6	0.48	45	4	0.012	0.016	0.35
0,5×8	XXX	0.7	8	0.48	45	4	0.012	0.016	0.12
0,5×10	XXX	0.7	10	0.48	50	4	0.008	0.012	0.08
0,6×2	XXX	0.9	2	0.58	45	4	0.016	0.02	1
0,6×3	XXX	0.9	3	0.58	45	4	0.016	0.02	1
0,6×4	XXX	0.9	4	0.58	45	4	0.016	0.02	0.9
0,6×6	XXX	0.9	6	0.58	45	4	0.012	0.016	0.5
0,6×8	XXX	0.9	8	0.58	45	4	0.012	0.016	0.35
0,6×10	XXX	0.9	10	0.58	50	4	0.012	0.016	0.12
0,8×2	XXX	1.2	2	0.78	45	4	0.016	0.02	1
0,8×3	XXX	1.2	3	0.78	45	4	0.016	0.02	1
0,8×4	XXX	1.2	4	0.78	45	4	0.016	0.02	1
0,8×6	XXX	1.2	6	0.78	45	4	0.016	0.02	0.8
0,8×8	XXX	1.2	8	0.78	45	4	0.012	0.016	0.8
0,8×10	XXX	1.2	10	0.78	50	4	0.012	0.016	0.35
0,8×12	XXX	1.2	12	0.78	50	4	0.012	0.016	0.2

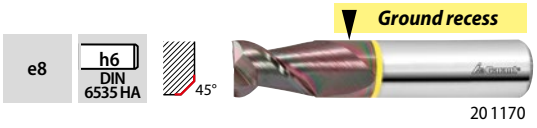
$\varnothing D_c \times L_4$	11X 20 1140 Solid carbide micro slot drill								Correction factor $a_{p\,korr}$
		L_3	L_4	$\varnothing D_4$	L_{tot}		f_z	f_z	
mm	DLC	mm	mm	mm	mm	mm	mm	mm	
1×2	XXX	1.5	2	0.95	45	4	0.025	0.03	1
1×3	XXX	1.5	3	0.95	45	4	0.025	0.03	1
1×4	XXX	1.5	4	0.95	45	4	0.025	0.03	1
1×5	XXX	1.5	5	0.95	45	4	0.025	0.03	1
1×6	XXX	1.5	6	0.95	45	4	0.025	0.03	0.9
1×8	XXX	1.5	8	0.95	45	4	0.025	0.03	0.8
1×10	XXX	1.5	10	0.95	45	4	0.02	0.025	0.5
1×12	XXX	1.5	12	0.95	50	4	0.02	0.025	0.35
1×14	XXX	1.5	14	0.95	50	4	0.02	0.025	0.3
1×15	XXX	1.5	15	0.95	50	4	0.02	0.025	0.2
1×16	XXX	1.5	16	0.95	50	4	0.02	0.025	0.1
1×20	XXX	1.5	20	0.95	60	4	0.016	0.02	0.08
1×25	XXX	1.5	25	0.95	60	4	0.016	0.02	0.04
1×30	XXX	1.5	30	0.95	70	4	0.012	0.016	0.02
1,2×3	XXX	1.8	3	1.14	45	4	0.025	0.03	1
1,2×4	XXX	1.8	4	1.14	45	4	0.025	0.03	1
1,2×6	XXX	1.8	6	1.14	45	4	0.025	0.03	1
1,2×8	XXX	1.8	8	1.14	45	4	0.025	0.03	0.9
1,2×10	XXX	1.8	10	1.14	45	4	0.025	0.03	0.8
1,2×12	XXX	1.8	12	1.14	50	4	0.02	0.025	0.5
1,2×15	XXX	1.8	15	1.14	50	4	0.02	0.025	0.35
1,2×20	XXX	1.8	20	1.14	60	4	0.02	0.025	0.12
1,4×6	XXX	1.8	6	1.34	45	4	0.025	0.03	0.8
1,5×3	XXX	2.3	3	1.44	45	4	0.025	0.03	1
1,5×4	XXX	2.3	4	1.44	45	4	0.025	0.03	1
1,5×6	XXX	2.3	6	1.44	45	4	0.025	0.03	1
1,5×8	XXX	2.3	8	1.44	45	4	0.025	0.03	1
1,5×10	XXX	2.3	10	1.44	45	4	0.025	0.03	0.9
1,5×12	XXX	2.3	12	1.44	50	4	0.025	0.03	0.8
1,5×14	XXX	2.3	14	1.44	50	4	0.025	0.03	0.6
1,5×15	XXX	2.3	15	1.44	50	4	0.02	0.025	0.5
1,5×16	XXX	2.3	16	1.44	50	4	0.02	0.025	0.4
1,5×20	XXX	2.3	20	1.44	60	4	0.02	0.025	0.35
1,5×25	XXX	2.3	25	1.44	60	4	0.02	0.025	0.12
1,5×30	XXX	2.3	30	1.44	70	4	0.016	0.02	0.08
1,8×6	XXX	2.7	6	1.71	45	4	0.03	0.035	1
1,8×8	XXX	2.7	8	1.71	45	4	0.03	0.035	1
1,8×10	XXX	2.7	10	1.71	45	4	0.03	0.035	0.9
1,8×12	XXX	2.7	12	1.71	50	4	0.03	0.035	0.9
1,8×15	XXX	2.7	15	1.71	50	4	0.03	0.035	0.8
1,8×20	XXX	2.7	20	1.71	60	4	0.025	0.03	0.5
2×4	XXX	3	4	1.91	45	4	0.03	0.035	1
2×6	XXX	3	6	1.91	45	4	0.03	0.035	1
2×8	XXX	3	8	1.91	45	4	0.03	0.035	1
2×10	XXX	3	10	1.91	45	4	0.03	0.035	1
2×12	XXX	3	12	1.91	50	4	0.03	0.035	0.9
2×14	XXX	3	14	1.91	50	4	0.03	0.035	0.8
2×15	XXX	3	15	1.91	50	4	0.03	0.035	0.8
2×16	XXX	3	16	1.91	50	4	0.03	0.035	0.7
2×20	XXX	3	20	1.91	60	4	0.025	0.03	0.5
2×25	XXX	3	25	1.91	60	4	0.025	0.03	0.35
2×30	XXX	3	30	1.91	70	4	0.025	0.03	0.2
2×35	XXX	3	35	1.91	80	4	0.02	0.025	0.08
2×40	XXX	3	40	1.91	80	4	0.02	0.025	0.08
2,5×8	XXX	3.7	8	2.41	50	4	0.035	0.04	1
2,5×12	XXX	3.7	12	2.41	50	4	0.03	0.035	0.9
2,5×15	XXX	3.7	15	2.41	50	4	0.03	0.035	0.9
2,5×16	XXX	3.7	16	2.41	50	4	0.03	0.035	0.8
2,5×20	XXX	3.7	20	2.41	60	4	0.03	0.035	0.8
2,5×25	XXX	3.7	25	2.41	60	4	0.025	0.03	0.5
2,5×30	XXX	3.7	30	2.41	70	4	0.025	0.03	0.35
3×6	XXX	4.6	6	2.91	45	4	0.03	0.035	1
3×8	XXX	4.6	8	2.91	45	4	0.03	0.035	1
3×10	XXX	4.6	10	2.91	45	4	0.03	0.035	1
3×12	XXX	4.6	12	2.91	45	4	0.03	0.035	1
3×15	XXX	4.6	15	2.91	50	4	0.03	0.035	1
3×20	XXX	4.6	20	2.91	60	4	0.03	0.035	0.9
3×25	XXX	4.6	25	2.91	60	4	0.03	0.035	0.8
3×30	XXX	4.6	30	2.91	70	4	0.025	0.03	0.5
3×35	XXX	4.6	35	2.91	70	4	0.025	0.03	0.35
3×40	XXX	4.6	40	2.91	80	4	0.025	0.03	0.35
3×45	XXX	4.6	45	2.91	80	4	0.025	0.03	0.2

Solid carbide | DIN 6527 | Type W

Solid carbide slot drill

Stronger cutting edges.
Dimensions similar to DIN 6527.

20 1170 – With the latest generation of **DLC coating sp²**.



20 1170

20 1200

Suitable for/ v_c [m/min]	Alu	Alu	Alu cast > 10 % Si	PMMA acrylic	PE-HD	PA 66	PEEK	PF 31	AFRP aramid	PVDF GF20	POM GF25	PA 66 GF30	PEEK GF30	PTFE CF25	PEEK CF30	Honey-comb sandwich	Cu	CuZn					
ISO code	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N					
20 1170	480	440	400	200	160	200	150	130		180	160	150	130	160		300	160	200		●	●	○	●
20 1200	180	140	105	180	130	150	130	110								180	140	180		●	●	○	●

Ø D_C	11X 20 1170 Garant	12X 20 1200 HOLEX	L_s	L_4	Ø D_4	L_{tot}		45°	Alu f_z	Alu f_z
	Solid carbide slot drill									
	DIN 6535 HA	DIN 6535 HB		20 1170	20 1170	20 1170	20 1200				
mm	DLC		mm	mm	mm	mm	mm	mm	mm	mm	mm
2	XXX	XXX	5	10	1.9	54	50	6	0.05	0.008	0.01
3	XXX	XXX	5	12	2.9	54	50	6	0.1	0.008	0.01
4	XXX	XXX	8	15	3.9	54	54	6	0.1	0.015	0.02
5	XXX	XXX	9	16	4.9	54	54	6	0.1	0.015	0.02
6	XXX	XXX	10	17	5.9	54	54	6	0.1	0.025	0.03
8	XXX	XXX	12	20	7.7	58	58	8	0.1	0.03	0.04
10	XXX	XXX	14	24	9.7	66	66	10	0.1	0.04	0.05
11	XXX	–	15	25	10.7	73	–	12	0.1	0.04	0.05
12	XXX	XXX	16	26	11.7	73	73	12	0.1	0.05	0.07
14	XXX	XXX	18	28	13.7	75	75	14	0.1	0.05	0.07
16	XXX	XXX	22	32	15.5	82	82	16	0.1	0.065	0.09
18	–	XXX	24	–	–	–	84	18	0.1	0.065	0.09
20	XXX	XXX	26	40	19.5	92	92	20	0.1	0.085	0.12

Solid carbide | DIN 6527 | Type W

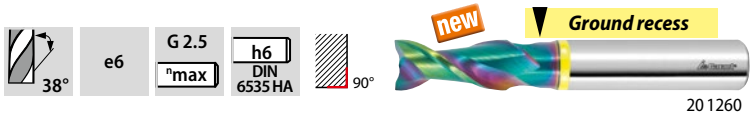
GARANT Master ALU solid carbide slot drill / solid carbide slot drills

Stronger cutting edges.
Dimensions similar to DIN 6527.

20 1260/1270 – With the latest generation of **DLC coating sp²**.

Advantage:

20 1260 – Extremely smooth cutting for **excellent surface quality.**



20 1260

20 1270

20 1280

Suitable for/ v_c [m/min]	Alu	Alu	Alu cast > 10 % Si	PMMA acrylic	PE-HD	PA 66	PEEK	PF 31	AFRP aramid	PVDF GF20	POM GF25	PA 66 GF30	PEEK GF30	PTFE CF25	PEEK CF30	Honey-comb sandwich	Cu	CuZn					
ISO code	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N					
20 1260	550	500	450	200	160	200	150	130		180	160	150	130	160		300	160	200		●	●	○	●
20 1270	480	440	400	200	160	200	150	130		180	160	150	130	160		300	160	200		●	●	○	●
20 1280	180	140	105	180	130	150	130	110								180	140	180		●	●	○	●

Ø D_C	11X 20 1260 Garant	11X 20 1270 Garant	12X 20 1280 HOLEX	L_s	L_4	Ø D_4	L_{tot}		45°	Alu f_z		Alu f_z	
	GARANT Master Alu solid carbide slot drill	Solid carbide slot drill											
	DIN 6535 HA	DIN 6535 HA	DIN 6535 HB		20 1260 20 1270	20 1260 20 1270			20 1270 20 1280	20 1260	20 1270 20 1280	20 1260	20 1270 20 1280
mm	DLC	DLC		mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
1	XXX	–	–	5	10	0.9	57	6	–	0.03	–	0.04	–
2	XXX	XXX	XXX	8	16	1.9	57	6	0.05	0.03	0.008	0.04	0.01
3	XXX	XXX	XXX	8	18	2.9	57	6	0.1	0.04	0.008	0.05	0.01
4	XXX	XXX	XXX	11	18	3.9	57	6	0.1	0.05	0.015	0.06	0.02
5	XXX	XXX	XXX	13	20	4.9	57	6	0.1	0.06	0.015	0.08	0.02
6	XXX	XXX	XXX	13	20	5.9	57	6	0.1	0.06	0.025	0.08	0.03
8	XXX	XXX	XXX	19	26	7.7	63	8	0.1	0.08	0.03	0.1	0.04
10	XXX	XXX	XXX	22	29	9.7	72	10	0.1	0.09	0.04	0.12	0.05
11	–	XXX	–	24	34	10.7	84	12	0.1	–	0.04	–	0.05
12	XXX	XXX	XXX	26	36	11.7	83	12	0.1	0.1	0.05	0.15	0.07
14	–	XXX	XXX	26	36	13.7	83	14	0.1	–	0.05	–	0.07
16	XXX	XXX	XXX	32	42	15.5	92	16	0.1	0.14	0.065	0.18	0.09
18	–	XXX	XXX	32	42	17.5	92	18	0.1	–	0.065	–	0.09
20	XXX	XXX	XXX	38	52	19.5	104	20	0.1	0.18	0.085	0.22	0.12

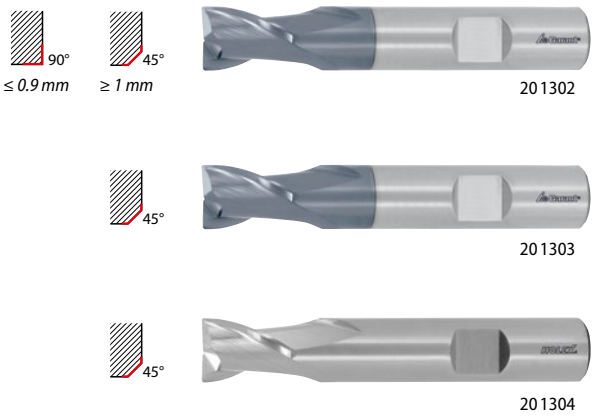
Solid carbide | DIN 6527 | Type N | e8 | 2 | 30° | a_e 0.3×D

DIN 6535 HA | DIN 6535 HB

Solid carbide slot drill

Dimensions similar to **DIN 6527**.

20 1302/1303 – Improved coating for general-purpose applications in steel and cast iron.



Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	K						
20 1302/1303		280	200	120	110	100	70	60						70	50		90	●		●	●	○	●
20 1304	170	140	100	70	60	45								40			55	○		●	●	○	●

∅ e8 D_C	11X 20 1302 Garant	11X 20 1303 Garant	12X 20 1304 HOLEX	L_s	L_{tot}		Shank form	45° 20 1302 20 1304	45° 20 1303	< 750 N f_z	< 750 N f_z
	Solid carbide slot drill										
mm	AlCrN	AlCrN		mm	mm	mm		mm	mm	mm	mm
0,3	XXX	–	–	1	38	3	HA	–	–	0.002	0.002
0,4	XXX	–	–	1	38	3	HA	–	–	0.002	0.002
0,5	XXX	–	–	1.5	38	3	HA	–	–	0.003	0.003
0,6	XXX	–	–	1.5	38	3	HA	–	–	0.003	0.003
0,7	XXX	–	–	2	38	3	HA	–	–	0.003	0.003
0,8	XXX	–	–	2	38	3	HA	–	–	0.003	0.003
0,9	XXX	–	–	2.5	38	3	HA	–	–	0.003	0.003
1	XXX	–	–	3	38	3	HA	0.1	–	0.005	0.006
1,2	XXX	–	–	3	38	3	HA	0.1	–	0.005	0.006
1,4	XXX	–	–	3	38	3	HA	0.1	–	0.005	0.006
1,5	XXX	–	–	3	38	3	HA	0.1	–	0.005	0.006
1,6	XXX	–	–	3	38	3	HA	0.1	–	0.005	0.006
1,8	XXX	–	–	3	38	3	HA	0.1	–	0.005	0.006
2	XXX	–	XXX	4	38	3	HA	0.1	–	0.01	0.011
2,5	XXX	–	–	4	50	6	HB	0.1	–	0.01	0.011
2,8	XXX	–	–	5	50	6	HB	0.1	–	0.01	0.011
3	XXX	XXX	XXX	5	50	6	HB	0.13	0.1	0.02	0.025
3,8	XXX	XXX	–	6	54	6	HB	0.13	0.1	0.02	0.025
4	XXX	XXX	XXX	8	54	6	HB	0.18	0.1	0.02	0.025
4,8	XXX	XXX	–	9	54	6	HB	0.18	0.1	0.02	0.025
5	XXX	XXX	XXX	9	54	6	HB	0.2	0.1	0.03	0.04
5,75	XXX	XXX	–	10	54	6	HB	0.2	0.1	0.03	0.04
6	XXX	XXX	XXX	10	54	6	HB	0.2	0.1	0.04	0.05
7	XXX	XXX	XXX	11	58	8	HB	0.2	0.1	0.04	0.05
7,75	XXX	XXX	–	12	58	8	HB	0.2	0.1	0.04	0.05
8	XXX	XXX	XXX	12	58	8	HB	0.2	0.1	0.05	0.08
9	XXX	XXX	XXX	13	66	10	HB	0.3	0.1	0.05	0.08
9,7	XXX	XXX	–	14	66	10	HB	0.3	0.1	0.05	0.08
10	XXX	XXX	XXX	14	66	10	HB	0.3	0.1	0.06	0.09
11	XXX	XXX	–	16	73	12	HB	0.3	0.1	0.06	0.09
11,7	XXX	XXX	–	16	73	12	HB	0.3	0.1	0.06	0.09
12	XXX	XXX	XXX	16	73	12	HB	0.3	0.1	0.07	0.1
13,7	XXX	XXX	–	18	75	14	HB	0.3	0.1	0.07	0.1
14	XXX	XXX	XXX	18	75	14	HB	0.3	0.1	0.07	0.1
15,7	XXX	XXX	–	22	82	16	HB	0.4	0.1	0.08	0.13
16	XXX	XXX	XXX	22	82	16	HB	0.4	0.1	0.08	0.13
18	XXX	XXX	XXX	24	84	18	HB	0.4	0.1	0.09	0.15
20	XXX	XXX	XXX	26	92	20	HB	0.5	0.1	0.1	0.15

Solid carbide | DIN 6527 | Type N | e8 | 2 | 30° | a_e 0.3×D

Solid carbide slot drill

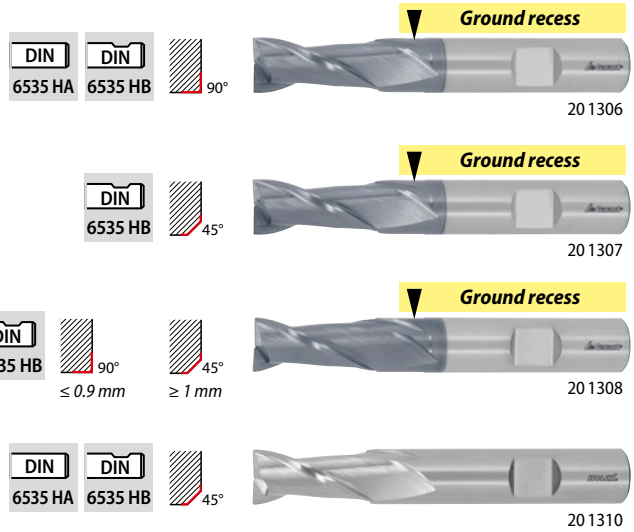
Dimensions similar to **DIN 6527**.

20 1306–1308 – Improved coating for general-purpose applications in steel and cast iron.

Note:

20 1308 – **Successor product for No. 201630 and 201522.**

20 1310 – **Successor product for No. 201640 and 201405.**



Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	K						
20 1306–20 1308		280	200	120	110	100	70	60						70	50		90	●		●	●	○	●
20 1310	170	140	100	70	60	45								40			55	○		●	●	○	●

∅ e8 D_c	11X 20 1306	11X 20 1307	11X 20 1308	12X 20 1310	L_s	L_4	∅ D_4	L_{tot}		Shank form	45°		< 750 N f_z	< 750 N f_z
	Solid carbide slot drill					20 1306 20 1307 20 1308	20 1306 20 1307 20 1308				20 1307	20 1308 20 1310		
mm	AlCrN	AlCrN	AlCrN		mm	mm	mm	mm	mm		mm	mm	mm	mm
0,25	–	–	XXX	–	0.5	–	–	38	3	HA	–	–	0.002	0.002
0,3	–	–	XXX	–	1	–	–	38	3	HA	–	–	0.002	0.002
0,35	–	–	XXX	–	1	–	–	38	3	HA	–	–	0.002	0.002
0,4	–	–	XXX	–	1	–	–	38	3	HA	–	–	0.002	0.002
0,5	–	–	XXX	–	1.5	–	–	38	3	HA	–	–	0.003	0.003
0,6	–	–	XXX	–	1.5	–	–	38	3	HA	–	–	0.003	0.003
0,7	–	–	XXX	–	2	–	–	38	3	HA	–	–	0.003	0.003
0,8	–	–	XXX	–	2	–	–	38	3	HA	–	–	0.003	0.003
0,9	–	–	XXX	–	2.5	–	–	38	3	HA	–	–	0.003	0.003
1	XXX	–	XXX	–	3	–	–	50	3	HA	–	0.1	0.005	0.006
1,1	–	–	XXX	–	3	–	–	50	3	HA	–	0.1	0.005	0.006
1,2	–	–	XXX	–	4	–	–	50	3	HA	–	0.1	0.005	0.006
1,4	XXX	–	XXX	–	4	–	–	50	3	HA	–	0.1	0.005	0.006
1,5	XXX	–	XXX	–	4	–	–	50	3	HA	–	0.1	0.005	0.006
1,6	XXX	–	XXX	–	4	–	–	50	3	HA	–	0.1	0.005	0.006
1,8	XXX	–	XXX	–	5	–	–	50	3	HA	–	0.1	0.005	0.006
2	XXX	–	XXX	XXX	7	15	1.8	57	3	HA	–	0.1	0.01	0.011
2,5	XXX	–	XXX	–	8	15	2.3	57	3	HA	–	0.1	0.01	0.011
2,8	XXX	–	XXX	–	8	15	2.7	57	6	HB	–	0.1	0.01	0.011
3	XXX	XXX	XXX	XXX	8	15	2.8	57	6	HB	0.1	0.13	0.02	0.025
3,8	XXX	XXX	XXX	–	11	15	3.6	57	6	HB	0.1	0.13	0.02	0.025
4	XXX	XXX	XXX	XXX	11	15	3.8	57	6	HB	0.1	0.18	0.02	0.025
4,8	XXX	XXX	XXX	–	13	21	4.6	57	6	HB	0.1	0.18	0.02	0.025
5	XXX	XXX	XXX	XXX	13	21	4.8	57	6	HB	0.1	0.2	0.03	0.04
5,75	XXX	XXX	XXX	–	13	21	5.5	57	6	HB	0.1	0.2	0.03	0.04
6	XXX	XXX	XXX	XXX	13	21	5.8	57	6	HB	0.1	0.2	0.04	0.05
6,75	–	XXX	XXX	–	16	27	6.55	63	8	HB	0.1	0.2	0.04	0.05
7	XXX	XXX	XXX	XXX	16	27	6.8	63	8	HB	0.1	0.2	0.04	0.05
7,75	XXX	XXX	XXX	–	19	27	7.55	63	8	HB	0.1	0.2	0.04	0.05
8	XXX	XXX	XXX	XXX	19	27	7.8	63	8	HB	0.1	0.2	0.05	0.08
8,7	–	XXX	XXX	–	19	32	8.5	72	10	HB	0.1	0.3	0.05	0.08
9	XXX	XXX	XXX	XXX	19	32	8.8	72	10	HB	0.1	0.3	0.05	0.08
9,7	XXX	XXX	XXX	–	22	32	9.5	72	10	HB	0.1	0.3	0.05	0.08
10	XXX	XXX	XXX	XXX	22	32	9.8	72	10	HB	0.1	0.3	0.06	0.09
11	XXX	XXX	XXX	–	26	38	10.8	83	12	HB	0.1	0.3	0.06	0.09
11,7	XXX	XXX	XXX	–	26	38	11.5	83	12	HB	0.1	0.3	0.06	0.09
12	XXX	XXX	XXX	XXX	26	38	11.8	83	12	HB	0.1	0.3	0.07	0.1
13,7	XXX	XXX	XXX	–	26	38	13.5	83	14	HB	0.1	0.3	0.07	0.1
14	XXX	XXX	XXX	XXX	26	38	13.8	83	14	HB	0.1	0.3	0.07	0.1
15,7	XXX	XXX	XXX	–	32	44	15.4	92	16	HB	0.1	0.4	0.08	0.13
16	XXX	XXX	XXX	XXX	32	44	15.7	92	16	HB	0.1	0.4	0.08	0.13
18	XXX	XXX	XXX	XXX	32	44	17.7	92	18	HB	0.1	0.4	0.09	0.15
20	XXX	XXX	XXX	XXX	38	54	19.7	104	20	HB	0.1	0.5	0.1	0.15

Solid carbide | Standard | Type H | 0 −0.005 | 2 | a_e 0.1×D | h5 DIN 6535 HA

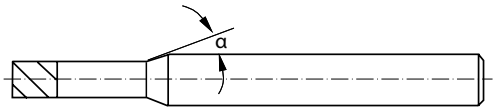
25° ≤ 0.8 mm | 30° ≥ 1 mm

Garant® Diabolo solid carbide precision micro slot drills

GARANT Diabolo:
Special geometry, coating and carbide for **hard machining in the high-performance field.** Suitable even for **machining electrolytic copper.** Double-relief ground with 2 chamfers hollow ground for high-precision hard machining.
Recess angle α = 16°.
Tolerances:

- Neck Ø: **D_4 = 0 / -0.01 mm.**

Note: At greater tool overhang lengths, use a reduced value for a_p!
Values for:
slots milled from solid: $a_p = 0.05 \times D \times a_p$ korr
side milling: $a_p = 0.1 \times D \times a_p$ korr
To calculate the feed rate vf please use the actual speed of the machine (the maximum possible speed)! e.g: vf = 18000 [rpm]× fz [mm/Z]× z



Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 50 HRC	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	CuZn					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	H	M	M	S	N					
20 1631					200	200	190	170	120	100	72	55	50	45				140		○	○	●	●

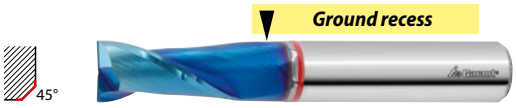
Ø D_c×L_4	11X 20 1631 Diabolo solid carbide micro slot drill	L_s	L_4	Ø D_4	L_{tot}		< 65 HRC f_z	< 65 HRC f_z	Correction factor a_p korr
mm	TiAlN	mm	mm	mm	mm	mm	mm	mm	
0,1×0,3	XXX	0.15	0.3	0.08	45	4	0.005	0.009	1
0,1×0,5	XXX	0.15	0.5	0.08	45	4	0.005	0.009	1
0,1×1	XXX	0.15	1	0.08	45	4	0.003	0.005	0.5
0,2×0,5	XXX	0.3	0.5	0.18	45	4	0.005	0.009	1
0,2×1	XXX	0.3	1	0.18	45	4	0.005	0.009	1
0,2×1,5	XXX	0.3	1.5	0.18	45	4	0.005	0.009	0.8
0,2×2	XXX	0.3	2	0.18	45	4	0.003	0.005	0.5
0,2×3	XXX	0.3	3	0.18	45	4	0.003	0.005	0.2
0,3×0,5	XXX	0.4	0.5	0.28	45	4	0.008	0.012	1
0,3×1	XXX	0.4	1	0.28	45	4	0.008	0.012	1
0,3×2	XXX	0.4	2	0.28	45	4	0.008	0.012	0.9
0,3×3	XXX	0.4	3	0.28	45	4	0.005	0.009	0.5
0,3×4	XXX	0.4	4	0.28	45	4	0.005	0.009	0.35
0,4×1	XXX	0.6	1	0.38	45	4	0.008	0.012	1
0,4×2	XXX	0.6	2	0.38	45	4	0.008	0.012	1
0,4×3	XXX	0.6	3	0.38	45	4	0.008	0.012	0.8
0,4×4	XXX	0.6	4	0.38	45	4	0.005	0.009	0.5
0,4×5	XXX	0.6	5	0.38	45	4	0.005	0.009	0.35
0,4×6	XXX	0.6	6	0.38	45	4	0.005	0.009	0.2
0,5×1	XXX	0.7	1	0.48	45	4	0.012	0.015	1
0,5×2	XXX	0.7	2	0.48	45	4	0.012	0.015	1
0,5×3	XXX	0.7	3	0.48	45	4	0.012	0.015	0.9
0,5×4	XXX	0.7	4	0.48	45	4	0.012	0.015	0.8
0,5×5	XXX	0.7	5	0.48	45	4	0.008	0.012	0.5
0,5×6	XXX	0.7	6	0.48	45	4	0.008	0.012	0.35
0,5×8	XXX	0.7	8	0.48	45	4	0.008	0.012	0.12
0,5×10	XXX	0.7	10	0.48	50	4	0.005	0.009	0.08
0,6×1	XXX	0.9	1	0.58	45	4	0.012	0.015	1
0,6×2	XXX	0.9	2	0.58	45	4	0.012	0.015	1
0,6×3	XXX	0.9	3	0.58	45	4	0.012	0.015	1
0,6×4	XXX	0.9	4	0.58	45	4	0.012	0.015	0.9
0,6×5	XXX	0.9	5	0.58	45	4	0.012	0.015	0.8
0,6×6	XXX	0.9	6	0.58	45	4	0.008	0.012	0.5
0,6×8	XXX	0.9	8	0.58	45	4	0.008	0.012	0.35
0,6×10	XXX	0.9	10	0.58	50	4	0.008	0.012	0.12
0,7×2	XXX	1	2	0.68	45	4	0.01	0.012	1
0,8×2	XXX	1.2	2	0.78	45	4	0.012	0.015	1
0,8×3	XXX	1.2	3	0.78	45	4	0.012	0.015	1
0,8×4	XXX	1.2	4	0.78	45	4	0.012	0.015	1
0,8×5	XXX	1.2	5	0.78	45	4	0.012	0.015	0.9
0,8×6	XXX	1.2	6	0.78	45	4	0.012	0.015	0.8
0,8×8	XXX	1.2	8	0.78	45	4	0.008	0.012	0.5
0,8×10	XXX	1.2	10	0.78	50	4	0.008	0.012	0.35

∅ D_C×L_4	11X **20 1631** Diabolo solid carbide micro slot drill	L_5	L_4	∅ D_4	L_{tot}		< 65 HRC f_z	< 65 HRC f_z	Correction factor a_p korr
mm	TiAlN	mm	mm	mm	mm	mm	mm	mm	
0,9×4	XXX	1.3	4	0.88	45	4	0.012	0.015	1
1×2	XXX	1.5	2	0.95	45	4	0.015	0.02	1
1×3	XXX	1.5	3	0.95	45	4	0.015	0.02	1
1×4	XXX	1.5	4	0.95	45	4	0.015	0.02	1
1×5	XXX	1.5	5	0.95	45	4	0.015	0.02	1
1×6	XXX	1.5	6	0.95	45	4	0.015	0.02	0.9
1×8	XXX	1.5	8	0.95	45	4	0.015	0.02	0.8
1×10	XXX	1.5	10	0.95	50	4	0.01	0.015	0.5
1×12	XXX	1.5	12	0.95	50	4	0.01	0.015	0.35
1×14	XXX	1.5	14	0.95	50	4	0.01	0.015	0.2
1×16	XXX	1.5	16	0.95	60	4	0.01	0.015	0.12
1×18	XXX	1.5	18	0.95	60	4	0.006	0.01	0.08
1×20	XXX	1.5	20	0.95	60	4	0.006	0.01	0.04
1,2×2	XXX	1.8	2	1.14	45	4	0.015	0.02	1
1,2×4	XXX	1.8	4	1.14	45	4	0.015	0.02	1
1,2×6	XXX	1.8	6	1.14	45	4	0.015	0.02	1
1,2×8	XXX	1.8	8	1.14	45	4	0.015	0.02	0.9
1,2×10	XXX	1.8	10	1.14	45	4	0.015	0.02	0.8
1,2×12	XXX	1.8	12	1.14	50	4	0.01	0.015	0.5
1,2×14	XXX	1.8	14	1.14	50	4	0.01	0.015	0.35
1,2×16	XXX	1.8	16	1.14	50	4	0.01	0.015	0.35
1,2×18	XXX	1.8	18	1.14	60	4	0.01	0.015	0.2
1,2×20	XXX	1.8	20	1.14	60	4	0.01	0.015	0.12
1,4×6	XXX	2.1	6	1.34	45	4	0.01	0.015	1
1,4×8	XXX	2.1	8	1.34	45	4	0.01	0.015	1
1,5×3	XXX	2.3	3	1.44	45	4	0.015	0.02	1
1,5×4	XXX	2.3	4	1.44	45	4	0.015	0.02	1
1,5×6	XXX	2.3	6	1.44	45	4	0.015	0.02	1
1,5×8	XXX	2.3	8	1.44	45	4	0.015	0.02	1
1,5×10	XXX	2.3	10	1.44	45	4	0.015	0.02	0.9
1,5×12	XXX	2.3	12	1.44	50	4	0.015	0.02	0.8
1,5×14	XXX	2.3	14	1.44	50	4	0.015	0.02	0.8
1,5×16	XXX	2.3	16	1.44	50	4	0.01	0.015	0.5
1,5×18	XXX	2.3	18	1.44	55	4	0.01	0.015	0.35
1,5×20	XXX	2.3	20	1.44	55	4	0.01	0.015	0.35
1,6×4	XXX	2.4	4	1.51	45	4	0.025	0.03	1
1,6×8	XXX	2.4	8	1.51	45	4	0.025	0.03	1
1,6×10	XXX	2.4	10	1.51	45	4	0.025	0.03	0.8
1,6×12	XXX	2.4	12	1.51	45	4	0.025	0.03	0.8
1,6×16	XXX	2.4	16	1.51	55	4	0.02	0.025	0.5
1,6×20	XXX	2.4	20	1.51	55	4	0.02	0.025	0.35
1,8×6	XXX	2.7	6	1.71	45	4	0.025	0.03	1
1,8×8	XXX	2.7	8	1.71	45	4	0.025	0.03	1
1,8×10	XXX	2.7	10	1.71	50	4	0.025	0.03	0.9
1,8×12	XXX	2.7	12	1.71	50	4	0.025	0.03	0.9
1,8×16	XXX	2.7	16	1.71	50	4	0.025	0.03	0.8
1,8×20	XXX	2.7	20	1.71	55	4	0.02	0.025	0.5
2×4	XXX	3	4	1.91	45	4	0.025	0.03	1
2×6	XXX	3	6	1.91	45	4	0.025	0.03	1
2×8	XXX	3	8	1.91	45	4	0.025	0.03	1
2×10	XXX	3	10	1.91	45	4	0.025	0.03	1
2×12	XXX	3	12	1.91	50	4	0.025	0.03	0.9
2×14	XXX	3	14	1.91	50	4	0.025	0.03	0.9
2×16	XXX	3	16	1.91	50	4	0.025	0.03	0.8
2×18	XXX	3	18	1.91	55	4	0.025	0.03	0.8
2×20	XXX	3	20	1.91	55	4	0.02	0.025	0.5
2×22	XXX	3	22	1.91	60	4	0.02	0.025	0.5
2×25	XXX	3	25	1.91	60	4	0.02	0.025	0.35
2×30	XXX	3	30	1.91	70	4	0.02	0.025	0.2
2×35	XXX	3	35	1.91	80	4	0.015	0.02	0.08
2×40	XXX	3	40	1.91	80	4	0.015	0.02	0.08
2,5×6	XXX	3.7	6	2.41	45	4	0.025	0.03	1
2,5×8	XXX	3.7	8	2.41	45	4	0.025	0.03	1
2,5×10	XXX	3.7	10	2.41	45	4	0.025	0.03	1
2,5×12	XXX	3.7	12	2.41	50	4	0.025	0.03	0.9
2,5×15	XXX	3.7	15	2.41	50	4	0.025	0.03	0.9
2,5×20	XXX	3.7	20	2.41	60	4	0.025	0.03	0.8
2,5×25	XXX	3.7	25	2.41	60	4	0.02	0.025	0.5
2,5×30	XXX	3.7	30	2.41	70	4	0.02	0.025	0.35
3×6	XXX	4.6	6	2.91	45	4	0.025	0.03	1
3×8	XXX	4.6	8	2.91	45	4	0.025	0.03	1
3×10	XXX	4.6	10	2.91	45	4	0.025	0.03	1
3×12	XXX	4.6	12	2.91	45	4	0.025	0.03	1
3×14	XXX	4.6	14	2.91	50	4	0.025	0.03	1
3×16	XXX	4.6	16	2.91	50	4	0.025	0.03	1
3×18	XXX	4.6	18	2.91	60	4	0.025	0.03	0.9
3×20	XXX	4.6	20	2.91	60	4	0.025	0.03	0.9
3×25	XXX	4.6	25	2.91	60	4	0.025	0.03	0.8
3×30	XXX	4.6	30	2.91	70	4	0.02	0.025	0.5
3×35	XXX	4.6	35	2.91	70	4	0.02	0.025	0.35
3×40	XXX	4.6	40	2.91	80	4	0.02	0.025	0.35

Solid carbide | DIN 6527 | Type H | e8 | 2 | 30° | | | a_e 0.05×D | h6 DIN 6535 HA | HPC

GARANT Diablo solid carbide slot drill HPC

GARANT Diabolo:
Special geometry, coating and carbide specially for hard machining.
New generation of high performance milling cutters in the **HPC machining range.**
From size 2 with neck recess (dimensions L_4 and D_4).



20 1639

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 50 HRC	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	Graphite GRP CRP					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	H	M	M	S	N					
20 1639								120	110	80	60	50							○	○	●	●	

Ø e8 D_C	11X	20 1639	L_s	L_4	Ø D_4	L_{tot}		45°	< 65 HRC f_z	< 65 HRC f_z
		Diabolo solid carbide slot drill HPC								
mm		TiAlN	mm	mm	mm	mm	mm	mm	mm	mm
0,5		XXX	1.5	–	–	57	6	0.02	0.003	0.004
1		XXX	3	–	–	57	6	0.02	0.003	0.004
1,5		XXX	4	–	–	57	6	0.03	0.004	0.005
2		XXX	5	12	1.8	57	6	0.03	0.004	0.006
2,5		XXX	6	13	2.3	57	6	0.04	0.005	0.007
3		XXX	8	15	2.8	57	6	0.04	0.006	0.008
3,5		XXX	8	15	3.3	57	6	0.05	0.007	0.009
4		XXX	11	15	3.8	57	6	0.05	0.008	0.01
5		XXX	13	21	4.8	57	6	0.06	0.01	0.014
6		XXX	16	24	5.8	57	6	0.07	0.01	0.014
8		XXX	19	27	7.8	63	8	0.08	0.01	0.016
10		XXX	22	32	9.8	72	10	0.1	0.02	0.024
12		XXX	26	38	11.8	83	12	0.13	0.02	0.024
16		XXX	32	44	15.7	92	16	0.18	0.03	0.035
20		XXX	38	54	19.7	104	20	0.2	0.04	0.045

Solid carbide | Standard | Type H | 0 –0.02 | 2 | 35° | ≠ | | a_e 0.05×D | h6 DIN 6535 HA | HPC

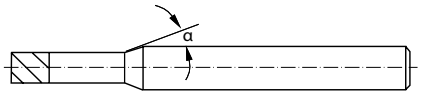
GARANT Solid carbide slot drill HPC

GARANT Diabolo 70:
Special solid carbide substrate with extremely high tensile strength combined with **outstanding wear resistance** for optimum process reliability. Newly developed **nano-crystalline high-tech coating for hard milling up to 70 HRC.** Very suitable for **continuous use** in tool and mould making.
Sizes 0.5 – 5: **Recess angle α = 15°.**

Application: Due to the **special hard geometry** ideal for use on hardened materials from 60 HRC to 70 HRC.

Note: f_z for a_p = 0.05×D.

20 1648



_0,5 – 5

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	Graphite GRP CRP	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	N						
20 1648										60	50	40	35							○	●	●	

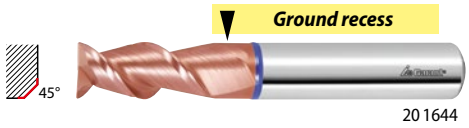
Ø D_C	11X	20 1648	L_s	L_{tot}		< 70 HRC f_z	< 70 HRC f_z
		Solid carbide slot drill HPC					
mm		TiAlN	mm	mm	mm	mm	mm
0,5		XXX	1.3	40	4	0.003	0.004
1		XXX	2.5	40	4	0.003	0.004
1,5		XXX	3.8	40	4	0.004	0.005
2		XXX	5	40	4	0.004	0.006
2,5		XXX	6.3	40	4	0.005	0.007
3		XXX	7.5	50	6	0.006	0.008
4		XXX	10	50	6	0.008	0.01
5		XXX	12.5	50	6	0.01	0.014
6		XXX	15	50	6	0.01	0.014

Solid carbide | DIN 6527 | Type N | e8 | 2 | 50° | a_e 0.5×D | h6 DIN 6535 HA | HPC

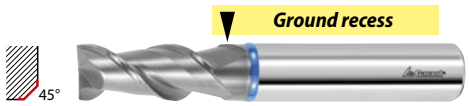
HPC solid carbide slot drill, GARANT Master INOX HPC solid carbide slot drill

Double relief ground **2 chamfers hollow ground** for use in **HPC applications.**

20 1647 – Greater oxidation resistance and high-temperature hardness. Can be used at high cutting speeds, particularly suitable even for Toolox®.



20 1644



20 1647

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	TOOLOX® 33 HRC	TOOLOX® 44 HRC	INOX < 900 N	INOX > 900 N	Uni
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	H	H	M	M	
20 1644				250	220	200	180	170								90	80	●
20 1647				250	230	200	170	170						115	80	110	90	○

∅ e8 D_c	20 1644	20 1647	L_s	L_4	∅ D_4	L_{tot}		45°	INOX < 900 N f_z	INOX < 900 N f_z
	Solid carbide slot drill	GARANT Master INOX solid carbide slot drill								
	HPC									
mm	TiAlN	TiAlN	mm	mm	mm	mm	mm	mm	mm	mm
1	XXX	XXX	3	13	0.95	57	6	0.02	0.008	0.01
2	XXX	XXX	5	15	1.8	57	6	0.03	0.01	0.014
3	XXX	XXX	8	15	2.8	57	6	0.04	0.015	0.02
4	XXX	XXX	11	15	3.8	57	6	0.05	0.018	0.022
5	XXX	XXX	13	21	4.8	57	6	0.08	0.018	0.022
6	XXX	XXX	13	21	5.8	57	6	0.15	0.035	0.04
8	XXX	XXX	19	27	7.8	63	8	0.17	0.05	0.06
10	XXX	XXX	22	32	9.8	72	10	0.17	0.055	0.067
12	XXX	XXX	26	38	11.8	83	12	0.25	0.07	0.08
16	XXX	XXX	32	44	15.7	92	16	0.3	0.09	0.11
20	XXX	XXX	38	54	19.7	104	20	0.4	0.11	0.13

Solid carbide | DIN 6527 | Type N | 2 | a_e 0.5×D | h6 DIN 6535 HA

GARANT Master Steel solid carbide slot drill HPC / solid carbide slot drills

Eccentric relief ground for stronger cutting edges.
Dimensions similar to DIN 6527.

Advantage:

20 1646 – **Optimised flute geometry** for improved chip evacuation.

HPC | 38° | f8 | 45°

20 1646

45° | h10 | 45°

20 1650

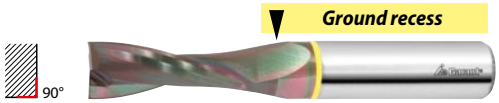
Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	Uni
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	K	
20 1646				260	240	190	180	150						80	70		250	●
20 1650		280	200	120	105	100								80	60		90	●

∅ D_c	20 1646	20 1650	L_s		L_4	∅ D_4	L_{tot}		45°	< 750 N f_z	< 750 N f_z
	GARANT Master Steel solid carbide slot drill	Solid carbide slot drill									
			20 1646	20 1650	20 1646	20 1646					
mm	TiAlN	TiAlN	mm	mm	mm	mm	mm	mm	mm	mm	mm
1	XXX	–	3	–	6	0.9	38	3	0.05	0.005	0.07
2	XXX	–	4	–	8	1.9	38	3	0.05	0.008	0.09
3	XXX	XXX	7	8	13	2.8	57	6	0.1	0.01	0.011
4	XXX	XXX	8	11	14	3.8	57	6	0.1	0.02	0.023
5	XXX	XXX	10	13	15.5	4.8	57	6	0.1	0.02	0.023
6	XXX	XXX	10	13	20	5.8	57	6	0.1	0.03	0.033
8	XXX	XXX	16	19	25	7.8	63	8	0.1	0.04	0.045
10	XXX	XXX	19	22	30	9.8	72	10	0.1	0.05	0.06
12	XXX	XXX	22	26	36	11.8	83	12	0.1	0.06	0.08
16	XXX	XXX	26	32	42	15.8	92	16	0.1	0.08	0.1
20	XXX	XXX	32	38	52	19.8	104	20	0.1	0.1	0.12

Solid carbide | Standard | Type W | e8 | 20° | a_e 0.25×D | h6 DIN 6535 HA | 2 | 3

Garant Solid carbide slot drill

With the latest generation of **DLC coating sp²**.
Special geometry for machining aluminium and plastics.
Application: Double relieved chip angle, **especially for aluminium machining.**



20 1735

Suitable for/ v_c [m/min]	Alu	Alu	Alu cast > 10 % Si	PMMA acrylic	PE-HD	PA 66	PEEK	PF 31	AFRP aramid	PVDF GF20	POM GF25	PA 66 GF30	PEEK GF30	PTFE CF25	PEEK CF30	Honey-comb sandwich	Cu	CuZn					
ISO code	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N					
20 1735	480	440	400	200	160	200	150	130		180	160	150	130	160		300	160	200		●	●	○	●

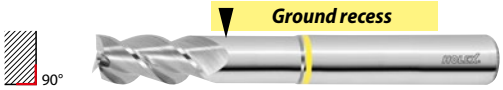
Ø e8 D_c	11X 20 1735	No. of teeth Z	L_s	L_4	Ø D_4	L_{tot}		Alu cast > 10 % Si f_z	Alu cast > 10 % Si f_z
	Solid carbide slot drill								
mm	DLC		mm	mm	mm	mm	mm	mm	mm
1	XXX	2	5	8	0.9	50	3	0.004	0.005
2	XXX	2	8	11	1.85	50	3	0.004	0.01
3	XXX	2	11	14	2.8	50	3	0.008	0.01
4	XXX	2	13	16	3.8	54	4	0.015	0.025
5	XXX	2	15	18	4.8	54	5	0.015	0.025
6	XXX	2	16	21	5.8	64	6	0.025	0.04
8	XXX	2	22	27	7.8	70	8	0.03	0.05
10	XXX	2	25	32	9.8	72	10	0.04	0.065
12	XXX	3	28	38	11.8	83	12	0.05	0.09
14	XXX	3	30	42	13.8	83	14	0.05	0.09
16	XXX	3	36	44	15.8	92	16	0.065	0.12
20	XXX	3	41	54	19.8	104	20	0.085	0.15

Solid carbide | Standard | Type W | e8 | 3 | 45° | a_e 0.5×D | h6 DIN 6535 HA

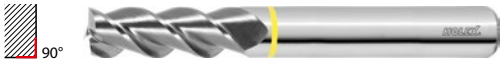
HOLEX Solid carbide slot drill

Eccentric relief ground, additionally **finish ground** in the flutes for **outstanding chip evacuation** in long-chipping aluminium workpieces.
Application: For roughing and finishing.

20 2241



20 2239



20 2242

Suitable for/ v_c [m/min]	Alu	Alu	Alu cast > 10 % Si	PMMA acrylic	PE-HD	PA 66	PEEK	PF 31	AFRP aramid	PVDF GF20	POM GF25	PA 66 GF30	PEEK GF30	PTFE CF25	PEEK CF30	Honey-comb sandwich	Cu	CuZn					
ISO code	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N					
20 2239–20 2242	170	140	105	160	110	130	110	90								160	120	150		●	○	○	○

Ø e8 D_c	12X 20 2241	12X 20 2239	12X 20 2242	L_s	L_4	Ø D_4	L_{tot}		Alu f_z	Alu f_z
	Solid carbide slot drill			20 2241 20 2239	20 2242	20 2239	20 2239	20 2241	20 2239 20 2242			
mm				mm	mm	mm	mm	mm	mm	mm	mm	mm
3	XXX	XXX	XXX	6	9	27	2.7	57	65	6	0.008	0.01
4	XXX	XXX	XXX	8	12	27	3.7	57	65	6	0.015	0.02
5	XXX	XXX	XXX	10	15	27	4.7	57	65	6	0.015	0.02
6	XXX	XXX	XXX	12	18	27	5.5	57	65	6	0.025	0.03
8	XXX	XXX	XXX	16	24	32	7.5	63	70	8	0.03	0.04
10	XXX	XXX	XXX	20	30	42	9.5	72	85	10	0.04	0.05
12	XXX	XXX	XXX	24	36	50	11.5	83	100	12	0.05	0.07
16	XXX	XXX	XXX	32	48	56	15.5	92	110	16	0.065	0.09
20	XXX	XXX	XXX	40	60	70	19.5	104	126	20	0.085	0.12

Solid carbide | DIN 6527 | Type W | MTC | h6 DIN 6535 HA | h6 DIN 6535 HB | G 2.5 n_{max} | G 2.5 n_{max}

Garant Solid carbide milling cutter MTC

Eccentric relief ground, additionally **polish ground** in the flutes for **outstanding chip evacuation** in long-chipping aluminium workpieces.
Without 45° corner chamfer.

20 2244 – **Without** 45° corner chamfer.
Size 1–2 – tolerance: Size nominal ∅ D_c = **e8.**
Size 2.5–20M – tolerance: Size nominal ∅ D_c = **h6.**

Application: Especially for **MTC (Multi Task Cutting)** use on the new generation of turning / milling centres.

Note:
20 2244 – **NEW GENERATION AVAILABLE! Recommended successor product is No. 202002.**

h6 | 45° | Ground recess

20 2243

e8 | h6 | 90° | Ground recess

20 2244

h6 | 45° | Ground recess

20 2249

Suitable for/ v_c [m/min]	Alu	Alu	Alu cast > 10 % Si	PMMA acrylic	PE-HD	PA 66	PEEK	PF 31	AFRP aramid	PVDF GF20	POM GF25	PA 66 GF30	PEEK GF30	PTFE CF25	PEEK CF30	Honey-comb sandwich	Cu	CuZn					
ISO code	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N					
20 2243–20 2249	190	150	120	180	130	150	130	110								180	120	150		●	●	○	○

∅ D_c	11X 20 2243	11X 20 2244	11X 20 2249	L_s	L_4	∅ D_4	L_{tot}		Shank form	45°	Alu f_z	Alu f_z
	Solid carbide milling cutter		Solid carbide milling cutter with internal coolant supply							20 2243 20 2249		
	MTC											
mm				mm	mm	mm	mm	mm		mm	mm	mm
1	–	XXX	–	2.5	5	0.95	57	6	HA	–	0.005	0.008
1,5	–	XXX	–	4	7.5	1.44	57	6	HA	–	0.005	0.008
2	–	XXX	–	5	10	1.92	57	6	HA	–	0.006	0.009
2,5	XXX	XXX	–	6.5	12.5	2.4	57	6	HA	0.05	0.006	0.009
3	XXX	XXX	–	8	13	2.7	57	6	HA	0.1	0.008	0.01
3,5	XXX	XXX	–	11	17	3.2	57	6	HA	0.1	0.008	0.01
4	XXX	XXX	–	11	17	3.7	57	6	HA	0.1	0.015	0.02
4,5	XXX	XXX	–	13	19	4.2	57	6	HA	0.1	0.015	0.02
5	XXX	XXX	–	13	19	4.7	57	6	HA	0.1	0.015	0.02
5,5	XXX	XXX	–	13	19	5.2	57	6	HA	0.1	0.015	0.02
6	XXX	XXX	XXX	13	19	5.7	57	6	HA	0.2	0.025	0.03
6M	XXX	XXX	–	18	24	5.7	62	6	HA	0.2	0.025	0.03
6,5	XXX	XXX	–	21	25	6.1	63	8	HA	0.2	0.025	0.03
7,5	XXX	XXX	–	21	25	7.1	63	8	HA	0.2	0.03	0.04
8	XXX	XXX	XXX	21	25	7.4	63	8	HA	0.2	0.03	0.04
8M	XXX	XXX	–	24	30	7.4	68	8	HA	0.2	0.03	0.04
8,5	XXX	XXX	–	22	30	7.9	72	10	HA	0.2	0.03	0.04
9,5	XXX	XXX	–	22	30	8.9	72	10	HA	0.2	0.04	0.05
10	XXX	XXX	XXX	22	30	9.2	72	10	HA	0.2	0.04	0.05
10M	XXX	XXX	–	30	38	9.2	80	10	HA	0.2	0.04	0.05
11,5	XXX	XXX	–	26	36	10.5	83	12	HA	0.2	0.05	0.07
12	XXX	XXX	XXX	26	36	11	83	12	HA	0.2	0.05	0.07
12M	XXX	XXX	–	36	46	11	93	12	HA	0.2	0.05	0.07
14	XXX	–	–	26	36	13	83	14	HA	0.2	0.05	0.07
16	XXX	XXX	XXX	36	42	15	92	16	HB	0.2	0.065	0.09
16M	XXX	XXX	–	48	58	15	108	16	HB	0.2	0.065	0.09
20	XXX	XXX	XXX	41	52	19	104	20	HB	0.2	0.085	0.12
20M	XXX	XXX	–	60	74	19	126	20	HB	0.2	0.085	0.12
25	XXX	–	–	52	62	24	121	25	HB	0.3	0.085	0.12

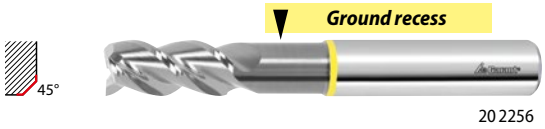
Solid carbide | Standard | Type W | h6 | 3 | 45° | ≠ | a_e 0.5×D | MTC | h6 DIN 6535 HA | h6 DIN 6535 HB | G 2.5 n max | G 2.5 n max

Garant® Solid carbide milling cutter MTC

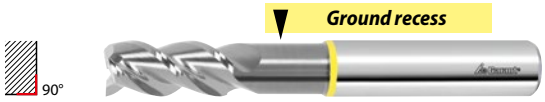
Eccentric relief ground, additionally **polish ground** in the flutes for **outstanding chip evacuation** in long-chipping aluminium workpieces.

20 2257 – **Without** 45° corner chamfer.

Application: Especially for **MTC (Multi Task Cutting)** use on the new generation of turning / milling centres.



20 2256



20 2257

Suitable for/ v_c [m/min]	Alu	Alu	Alu cast > 10 % Si	PMMA acrylic	PE-HD	PA 66	PEEK	PF 31	AFRP aramid	PVDF GF20	POM GF25	PA 66 GF30	PEEK GF30	PTFE CF25	PEEK CF30	Honey-comb sandwich	Cu	CuZn
ISO code	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
20 2256/2257	190	150	120	180	130	150	130	110								180	120	150

Ø h6 D_c	11X 20 2256	11X 20 2257	L_s	L_4	Ø D_4	L_{tot}		Shank form	45° 20 2256	Alu f_z	Alu f_z
	Solid carbide milling cutter										
mm	MTC		mm	mm	mm	mm	mm		mm	mm	mm
6	XXX	XXX	13	24	5.7	62	6	HA	0.2	0.025	0.03
8	XXX	XXX	21	30	7.4	68	8	HA	0.2	0.03	0.04
10	XXX	XXX	22	38	9.2	80	10	HA	0.2	0.04	0.05
12	XXX	XXX	26	46	11	93	12	HA	0.2	0.05	0.07
16	XXX	XXX	36	58	15	108	16	HB	0.2	0.065	0.09
20	XXX	XXX	41	74	19	126	20	HB	0.2	0.085	0.12

Solid carbide | Standard | Type W | h6 | 3 | 45° | ≠ | a_e 0.3×D | MTC | h6 DIN 6535 HA | h6 DIN 6535 HB | G 2.5 n max | G 2.5 n max

Garant® Solid carbide milling cutter MTC

Eccentric relief ground, additionally **polish ground** in the flutes for **outstanding chip evacuation** in long-chipping aluminium workpieces.

Application: Especially for **MTC (Multi Task Cutting)** use on the new generation of turning / milling centres.

20 2247

Suitable for/ v_c [m/min]	Alu	Alu	Alu cast > 10 % Si	PMMA acrylic	PE-HD	PA 66	PEEK	PF 31	AFRP aramid	PVDF GF20	POM GF25	PA 66 GF30	PEEK GF30	PTFE CF25	PEEK CF30	Honey-comb sandwich	Cu	CuZn
ISO code	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
20 2247	130	100	85	140	100	110	100	85								100	80	100

Ø h6 D_c	11X 20 2247	L_s	L_4	Ø D_4	L_{tot}		Shank form	45°	Alu f_z	Alu f_z
	Solid carbide milling cutter									
mm	MTC	mm	mm	mm	mm	mm		mm	mm	mm
4	XXX	6.5	24	3.7	80	6	HA	0.1	0.015	0.02
5	XXX	8	30	4.7	80	6	HA	0.1	0.015	0.02
6	XXX	10	42	5.7	80	6	HA	0.2	0.025	0.03
8	XXX	13	62	7.4	100	8	HA	0.2	0.03	0.04
10	XXX	16	58	9.2	100	10	HA	0.2	0.04	0.05
12	XXX	19	73	11	120	12	HA	0.2	0.05	0.07
16	XXX	25	100	15	150	16	HB	0.2	0.065	0.09
20	XXX	32	98	19	150	20	HB	0.2	0.085	0.12

Solid carbide | DIN 6527 | Type W | 3 | 45° | ≠ | a_e 0.5×D | MTC

h6 DIN 6535 HA | h6 DIN 6535 HB | G 2.5 n_{max} | G 2.5 n_{max}

Garant Solid carbide milling cutter MTC

With the latest generation of **DLC coating sp²**.
Eccentric relief ground, additionally **polish ground** in the flutes for **outstanding chip evacuation** in long-chipping aluminium components.
Lengths similar to **DIN 6527 long.**

20 2272 – **Without** 45° corner chamfer.
Size 1–2 – tolerance: Size nominal ∅ D_c = **e8.**
Size 2.5–20M – tolerance: Size nominal ∅ D_c = **h6.**

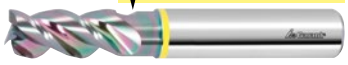
Application: Especially for **MTC (Multi Task Cutting)** use on the new generation of turning / milling centres.

Note:
20 2270 – **NEW GENERATION AVAILABLE! Recommended successor product is No. 202004.**

h6 | 45° | **Ground recess**

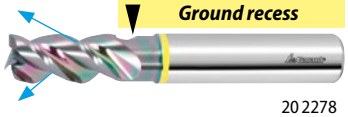
20 2270

e8 | h6 | 90° | **Ground recess**



20 2272

h6 | 45° | **Ground recess**



20 2278

Suitable for/ v_c [m/min]	Alu	Alu	Alu cast > 10 % Si	PMMA acrylic	PE-HD	PA 66	PEEK	PF 31	AFRP aramid	PVDF GF20	POM GF25	PA 66 GF30	PEEK GF30	PTFE CF25	PEEK CF30	Honey-comb sandwich	Cu	CuZn					
ISO code	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N					
20 2270–20 2278	480	440	400	200	160	200	150	130		180	160	150	130	160		300	160	200		●	●	○	○

∅ D_c	11X 20 2270	11X 20 2272	11X 20 2278	L_3	L_4	∅ D_4	L_{tot}		Shank form	45° 20 2270 20 2278	Alu f_z	Alu f_z
	Solid carbide milling cutter MTC		Solid carbide milling cutter with internal coolant supply									
mm	DLC	DLC	DLC	mm	mm	mm	mm	mm		mm	mm	mm
1	–	XXX	–	2.5	5	0.95	57	6	HA	–	0.005	0.008
1,5	–	XXX	–	4	7.5	1.44	57	6	HA	–	0.005	0.008
2	–	XXX	–	5	10	1.92	57	6	HA	–	0.006	0.009
2,5	XXX	XXX	–	6.5	12.5	2.4	57	6	HA	0.05	0.006	0.009
3	XXX	XXX	–	8	13	2.7	57	6	HA	0.1	0.008	0.01
3,5	XXX	XXX	–	11	17	3.2	57	6	HA	0.1	0.008	0.01
4	XXX	XXX	–	11	17	3.7	57	6	HA	0.1	0.015	0.02
4,5	XXX	XXX	–	13	19	4.2	57	6	HA	0.1	0.015	0.02
5	XXX	XXX	–	13	19	4.7	57	6	HA	0.1	0.015	0.02
5,5	XXX	XXX	–	13	19	5.2	57	6	HA	0.1	0.015	0.02
6	XXX	XXX	XXX	13	19	5.7	57	6	HA	0.2	0.025	0.03
6M	XXX	XXX	–	18	24	5.7	62	6	HA	0.2	0.025	0.03
7,5	XXX	XXX	–	21	25	7.1	63	8	HA	0.2	0.03	0.04
8	XXX	XXX	XXX	21	25	7.4	63	8	HA	0.2	0.03	0.04
8M	XXX	XXX	–	24	30	7.4	68	8	HA	0.2	0.03	0.04
9,5	XXX	XXX	–	22	30	8.9	72	10	HA	0.2	0.04	0.05
10	XXX	XXX	XXX	22	30	9.2	72	10	HA	0.2	0.04	0.05
10M	XXX	XXX	–	30	38	9.2	80	10	HA	0.2	0.04	0.05
11,5	XXX	XXX	–	26	36	10.5	83	12	HA	0.2	0.05	0.07
12	XXX	XXX	XXX	26	36	11	83	12	HA	0.2	0.05	0.07
12M	XXX	XXX	–	36	46	11	93	12	HA	0.2	0.05	0.07
14	XXX	–	–	26	36	13	83	14	HA	0.2	0.05	0.07
16	XXX	XXX	XXX	36	42	15	92	16	HB	0.2	0.065	0.09
16M	XXX	XXX	–	48	58	15	108	16	HB	0.2	0.065	0.09
20	XXX	XXX	XXX	41	52	19	104	20	HB	0.2	0.085	0.12
20M	XXX	XXX	–	60	74	19	126	20	HB	0.2	0.085	0.12

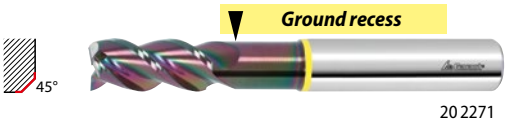
Solid carbide | Standard | Type W | h6 | 3 | 45° | ≠ | a_e 0.5×D | MTC | h6 DIN 6535 HA | h6 DIN 6535 HB | G 2.5 nmax | G 2.5 nmax

Garant Solid carbide milling cutter MTC

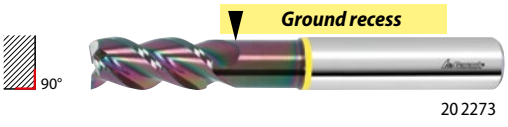
With the latest generation of **DLC coating sp²**.
Eccentric relief ground, additionally **polish ground** in the flutes for **outstanding chip evacuation** in long-chipping aluminium components.

20 2273 – **Without** 45° cutting edge chamfer.

Application: Especially for **MTC (Multi Task Cutting)** use on the new generation of turning / milling centres.



20 2271



20 2273

Suitable for/ v_c [m/min]	Alu	Alu	Alu cast > 10 % Si	PMMA acrylic	PE-HD	PA 66	PEEK	PF 31	AFRP aramid	PVDF GF20	POM GF25	PA 66 GF30	PEEK GF30	PTFE CF25	PEEK CF30	Honey-comb sandwich	Cu	CuZn					
ISO code	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N					
20 2271/2273	480	440	400	200	160	200	150	130		180	160	150	130	160		300	160	200	●	●	○	○	

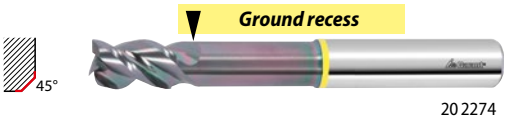
Ø h6 D_C	11X 20 2271	11X 20 2273	L_s	L_4	Ø D_4	L_{tot}		Shank form	45°	Alu f_z	Alu f_z
	Solid carbide milling cutter								20 2271		
	MTC										
mm	DLC	DLC	mm	mm	mm	mm	mm		mm	mm	mm
6	XXX	XXX	13	24	5.7	62	6	HA	0.2	0.025	0.03
8	XXX	XXX	21	30	7.4	68	8	HA	0.2	0.03	0.04
10	XXX	XXX	22	38	9.2	80	10	HA	0.2	0.04	0.05
12	XXX	XXX	26	46	11	93	12	HA	0.2	0.05	0.07
16	XXX	XXX	36	58	15	108	16	HB	0.2	0.065	0.09
20	XXX	XXX	41	74	19	126	20	HB	0.2	0.085	0.12

Solid carbide | Standard | Type W | h6 | 3 | 45° | ≠ | a_e 0.3×D | MTC | h6 DIN 6535 HA | h6 DIN 6535 HB | G 2.5 nmax | G 2.5 nmax

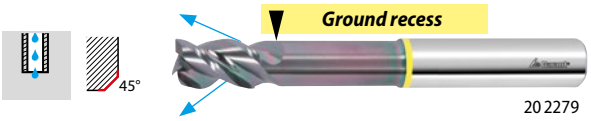
Garant Solid carbide milllling cutter MTC

With the latest generation of **DLC coating sp²**.
Eccentric relief ground, additionally **polish ground** in the flutes for **outstanding chip evacuation** in long-chipping aluminium components.

Application: Especially for **MTC (Multi Task Cutting)** use on the new generation of turning / milling centres.



20 2274



20 2279

Suitable for/ v_c [m/min]	Alu	Alu	Alu cast > 10 % Si	PMMA acrylic	PE-HD	PA 66	PEEK	PF 31	AFRP aramid	PVDF GF20	POM GF25	PA 66 GF30	PEEK GF30	PTFE CF25	PEEK CF30	Honey-comb sandwich	Cu	CuZn					
ISO code	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N					
20 2274/2279	440	400	360	180	150	180	140	120		170	150	140	120	150		280	150	190	●	●	○	○	

Ø h6 D_C	11X 20 2274	11X 20 2279	L_s	L_4	Ø D_4	L_{tot}		Shank form	45°	Alu f_z	Alu f_z
	Solid carbide milling cutter	Solid carbide milling cutter with internal cooling									
	MTC										
mm	DLC	DLC	mm	mm	mm	mm	mm		mm	mm	mm
4	XXX	–	6.5	24	3.7	80	6	HA	0.1	0.015	0.02
5	XXX	–	8	30	4.7	80	6	HA	0.1	0.015	0.02
6	XXX	XXX	10	42	5.7	80	6	HA	0.2	0.025	0.03
8	XXX	XXX	13	62	7.4	100	8	HA	0.2	0.03	0.04
10	XXX	XXX	16	58	9.2	100	10	HA	0.2	0.04	0.05
12	XXX	XXX	19	73	11	120	12	HA	0.2	0.05	0.07
16	XXX	XXX	25	100	15	150	16	HB	0.2	0.065	0.09
20	XXX	XXX	32	98	19	150	20	HB	0.2	0.085	0.12

Solid carbide | Standard | Type W | h6 | 3 | 45° | TPC

h6 DIN 6535 HA | h6 DIN 6535 HB | G 2.5 n_{max} | G 2.5 n_{max}

Garant

Solid carbide milling cutter TPC

Eccentric relief ground, additionally **polish ground** in the flutes for **outstanding chip evacuation** in long-chipping aluminium workpieces.
With double chip-breaker for exemplary chip formation.

20 2282/2284 – With the latest generation of **DLC coating sp²**.

Note:

20 2282 – **NEW GENERATION AVAILABLE! Recommended successor product is No. 203114.**

20 2284 – **NEW GENERATION AVAILABLE! Recommended successor product is No. 203115.**

20 2281/2282 – $a_{e\,max}$ = 0.12×D for TPC machining.
h_{max}: The values stated in the table are maximum values.

20 2283/2284 – $a_{e\,max}$ = 0.1×D for TPC machining.
h_{max}: The values stated in the table are maximum values.

20 2281

20 2282

20 2283

20 2284

Suitable for/ v_c [m/min]	Alu	Alu	Alu cast > 10 % Si	PMMA acrylic	PE-HD	PA 66	PEEK	PF 31	AFRP aramid	PVDF GF20	POM GF25	PA 66 GF30	PEEK GF30	PTFE CF25	PEEK CF30	Honey-comb sandwich	Cu	CuZn					
ISO code	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N					
20 2281/2283	130	100	85	125	90	100	80	70								100	80	100		●	●	○	○
20 2282/2284	280	270	180	125	110	140	90	80		125	115	105	90	110		120	70	90		●	●	○	○

∅ h6 D_C	11X 20 2281	11X 20 2282	L_3	L_4	∅ D_4	L_{tot}		Shank form	45°	TPC Alu h_{max}
	Solid carbide milling cutter TPC									
mm		DLC	mm	mm	mm	mm	mm		mm	mm
6	XXX	XXX	25	30	5.7	71	6	HA	0.2	0.032
8	XXX	XXX	33	40	7.4	80	8	HA	0.2	0.043
10	XXX	XXX	41	50	9.2	95	10	HA	0.2	0.054
12	XXX	XXX	49	60	11	109	12	HA	0.2	0.075
16	XXX	XXX	65	80	15	132	16	HB	0.2	0.096
20	XXX	XXX	82	100	19	154	20	HB	0.2	0.13

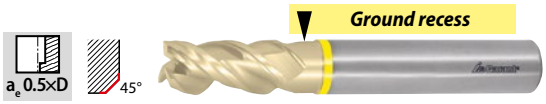
∅ h6 D_C	11X 20 2283	11X 20 2284	L_3	L_4	∅ D_4	L_{tot}		Shank form	45°	TPC Alu h_{max}
	Solid carbide milling cutter TPC									
mm		DLC	mm	mm	mm	mm	mm		mm	mm
6	XXX	XXX	31	36	5.7	76	6	HA	0.2	0.027
8	XXX	XXX	41	48	7.4	89	8	HA	0.2	0.036
10	XXX	XXX	51	60	9.2	104	10	HA	0.2	0.045
12	XXX	XXX	61	72	11	121	12	HA	0.2	0.063
16	XXX	XXX	81	96	15	148	16	HB	0.2	0.081
20	XXX	XXX	102	120	19	174	20	HB	0.2	0.108

Solid carbide | Standard | Type W | f8 | 3 | 45° | HPC | h6 DIN 6535 HA | h6 DIN 6535 HB | G 2.5 nmax | G 2.5 nmax

Garant Solid carbide roughing end mill HPC

Sturdy roughing end mill **without** knuckle profile.
With strong core, **special chip breaker recesses** and **large polished flutes.**

Application: For roughing milling with high demands on the component surface.



20 2248

20 2251

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	CuZn					
ISO code	N	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	N					
20 2248		500	**480**	**240**														**240**	●	○	○	○	
20 2251		250	**240**	**120**														**120**	●	○	○	○	

Ø f8 D_c	11X 20 2248	11X 20 2251	L_s		L_4		Ø D_4	L_{tot}			Shank form	45°	Alu f_z	Alu f_z
	Solid carbide milling cutter													
	HPC		20 2248	20 2251	20 2248	20 2251		20 2248	20 2251					
mm	Z0X	Z0X	mm	mm	mm	mm	mm	mm	mm	mm		mm	mm	mm
3	XXX	XXX	8	5	12	18	2.7	57	80	6	HA	0.1	0.035	0.045
4	XXX	XXX	11	6.5	18	24	3.7	57	80	6	HA	0.1	0.035	0.045
5	XXX	XXX	13	8	18	30	4.7	57	80	6	HA	0.1	0.06	0.08
6	XXX	XXX	13	10	18	42	5.7	57	80	6	HA	0.2	0.06	0.08
8	XXX	XXX	21	13	25	62	7.4	63	100	8	HA	0.2	0.06	0.08
10	XXX	XXX	22	16	30	58	9.2	72	100	10	HA	0.2	0.07	0.09
12	XXX	XXX	26	19	36	73	11	83	120	12	HA	0.2	0.07	0.09
16	XXX	XXX	36	25	42	100	15	92	150	16	HB	0.2	0.09	0.12
20	XXX	XXX	41	32	52	98	19	104	150	20	HB	0.2	0.12	0.16
25	XXX	–	52	–	62	–	24	121	–	25	HB	0.3	0.14	0.18

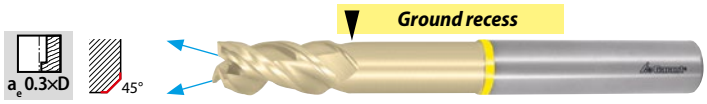
Solid carbide | Standard | Type W | f8 | 3 | 45° | HPC | h6 DIN 6535 HA | h6 DIN 6535 HB | G 2.5 nmax | G 2.5 nmax

Garant Solid carbide roughing end mill HPC with internal coolant supply

Sturdy roughing end mill **without** knuckle profile.
With strong core, **special chip breaker recesses** and **large polished flutes.**

Application: For roughing milling with high demands on the component surface.

20 2255



20 2259

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	CuZn					
ISO code	N	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	N					
20 2255		500	**480**	**240**														**240**	●	○	○	○	
20 2259		250	**240**	**120**														**120**	●	○	○	○	

Ø f8 D_c	11X 20 2255	11X 20 2259	L_s		L_4		Ø D_4	L_{tot}			Shank form	45°	Alu f_z	Alu f_z
	Solid carbide milling cutter with internal coolant supply													
	HPC		20 2255	20 2259	20 2255	20 2259		20 2255	20 2259					
mm	Z0X	Z0X	mm	mm	mm	mm	mm	mm	mm	mm		mm	mm	mm
6	XXX	XXX	13	10	18	42	5.7	57	80	6	HA	0.2	0.06	0.08
8	XXX	XXX	21	13	25	62	7.4	63	100	8	HA	0.2	0.06	0.08
10	XXX	XXX	22	16	30	58	9.2	72	100	10	HA	0.2	0.07	0.09
12	XXX	XXX	26	19	36	73	11	83	120	12	HA	0.2	0.07	0.09
16	XXX	XXX	36	25	42	100	15	92	150	16	HB	0.2	0.09	0.12
20	XXX	XXX	41	32	52	98	19	104	150	20	HB	0.2	0.12	0.16
25	XXX	–	52	–	62	–	24	121	–	25	HB	0.3	0.14	0.18

Solid carbide | Type W | e8 | 3 | 42° | ≠ | ≠ | a_e 0.5×D | h6 DIN 6535 HA | G 2.5 n max | HPC

GARANT Master Alu PickPocket HPC solid carbide roughing end mill

For roughing and finishing.
Up to 2 × D into solid material at very high feed rates and smooth cutting action.
Very high feed rates when plunging vertically.
Ramping capability up to 45°.

20 2006 – Improved chip evacuation due to central through-coolant. Due to the patented geometry also suitable for boring.

Advantage: **Optimised flute form, eccentric relief ground, generous chip spaces.**

Note:
20 2004 – Other sizes can be ordered from the Hoffmann Group e-shop.

DIN 6527 | 90° | Ground recess

20 2002

DIN 6527 | R | Ground recess

20 2004

DIN 6527 | R | Ground recess

20 2006

Standard | 90° | Ground recess

20 2012

Standard | R | Ground recess

20 2014

Suitable for/ v_c [m/min]	Alu	Alu	Alu cast > 10 % Si	PMMA acrylic	PE-HD	PA 66	PEEK	PF 31	AFRP aramid	PVDF GF20	POM GF25	PA 66 GF30	PEEK GF30	PTFE CF25	PEEK CF30	Honey-comb sandwich	Cu	CuZn					
ISO code	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N					
20 2002/2012	250	200	180	180	130	150	130	110								180	120	150		●	○	○	●
20 2004/2014	550	500	450	200	160	200	150	130		180	160	150	130	160		300	160	200		●	○	○	●
20 2006	550	500	450	200	160	200	150	130		180	160	150	130	160		300	160	200		●			

Ø e8 D_c	11X 20 2002	11X 20 2004	11X 20 2006	L_s	L_4	Ø D_4	L_{tot}		R 20 2004 20 2006	Alu f_z	Alu f_z
	GARANT Master Alu PickPocket solid carbide roughing end mill HPC		GARANT Master Alu PickPocket solid carbide roughing end mill with through-coolant								
mm		DLC	DLC	mm	mm	mm	mm	mm	mm	mm	mm
1,8	XXX	–	–	4	–	–	57	6	–	0.03	0.04
2	XXX	–	–	5	–	–	57	6	–	0.03	0.04
3	XXX	–	–	8	–	–	57	6	–	0.04	0.05
3,8	XXX	XXX	XXX	8	–	–	57	6	0.1	0.04	0.05
4	XXX	XXX	XXX	8	–	–	57	6	0.1	0.05	0.06
4,8	XXX	XXX	XXX	9	–	–	57	6	0.2	0.05	0.06
5	XXX	XXX	XXX	9	–	–	57	6	0.2	0.06	0.08
5,7	XXX	XXX	XXX	13	19	5.5	57	6	0.2	0.06	0.08
6	XXX	XXX	XXX	13	19	5.8	57	6	0.2	0.06	0.08
7	XXX	XXX	XXX	16	25	6.8	63	8	0.2	0.07	0.1
7,7	XXX	XXX	XXX	19	25	7.5	63	8	0.2	0.07	0.1
8	XXX	XXX	XXX	19	25	7.8	63	8	0.2	0.08	0.1
9	XXX	XXX	XXX	22	30	8.8	72	10	0.32	0.08	0.12
9,7	XXX	XXX	XXX	22	30	9.5	72	10	0.32	0.09	0.12
10	XXX	XXX	XXX	22	30	9.8	72	10	0.32	0.09	0.12
11,7	XXX	XXX	XXX	26	36	11.5	83	12	0.32	0.1	0.15
12	XXX	XXX	XXX	26	36	11.8	83	12	0.32	0.1	0.15
14	XXX	XXX	XXX	26	36	13.8	83	14	0.32	0.12	0.17
15,5	XXX	XXX	–	31	42	15.3	92	16	0.32	0.14	0.18
16	XXX	XXX	XXX	31	42	15.8	92	16	0.32	0.14	0.18
18	XXX	XXX	XXX	31	42	17.8	92	18	0.32	0.16	0.2
20	XXX	XXX	XXX	41	52	19.8	104	20	0.5	0.18	0.22

Ø e8 D_c	11X 20 2012	11X 20 2014	L_s	L_4	Ø D_4	L_{tot}		R 20 2014	Alu f_z	Alu f_z
	GARANT Master Alu PickPocket solid carbide roughing end mill HPC									
mm		DLC	mm	mm	mm	mm	mm	mm	mm	mm
6	XXX	XXX	13	24	5.8	62	6	0.2	0.04	0.06
7	XXX	XXX	16	30	6.8	68	8	0.2	0.05	0.07
8	XXX	XXX	19	30	7.8	68	8	0.2	0.05	0.07
9	XXX	XXX	22	38	8.8	80	10	0.32	0.06	0.08
10	XXX	XXX	22	38	9.8	80	10	0.32	0.06	0.08
12	XXX	XXX	26	46	11.8	93	12	0.32	0.08	0.1
14	XXX	XXX	26	52	13.8	99	14	0.32	0.1	0.12
16	XXX	XXX	31	58	15.8	108	16	0.32	0.12	0.14
18	XXX	XXX	31	67	17.8	117	18	0.32	0.14	0.16
20	XXX	XXX	41	74	19.8	126	20	0.5	0.2	0.18

Solid carbide | Standard | Type N | e8 | 3 | 30° | a_e 0.3×D

Solid carbide mini milling cutter

Shank similar to **DIN 6535 HB**.

Save on regrinding costs:

It is cheaper to use solid carbide mini milling cutters to the wear limit than to regrind them.

20 2260/2261 – Improved coating for general-purpose applications in steel and cast iron.

20 2260

20 2261

20 2262

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	K						
20 2260/2261		280	200	120	110	100	70	60						70	50		90	●		●	●	○	●
20 2262	170	140	100	70	60	45								40			55	○		●	●	○	●

∅ e8 D_C	11X 20 2260 Garant	11X 20 2261 Garant	12X 20 2262 HOLEX	L_s	L_{tot}		Shank form	45° 20 2260	45° 20 2261	< 750 N f_z	< 750 N f_z
	Solid carbide mini milling cutter										
mm	AlCrN	AlCrN		mm	mm	mm		mm	mm	mm	mm
0,5	XXX	–	XXX	1.5	38	3	HA	–	–	0.003	0.003
0,6	XXX	–	XXX	1.5	38	3	HA	–	–	0.003	0.003
0,8	XXX	–	XXX	2	38	3	HA	–	–	0.003	0.003
1	XXX	–	XXX	2	38	3	HA	0.1	–	0.005	0.006
1,1	XXX	–	XXX	2	38	3	HA	0.1	–	0.005	0.006
1,2	XXX	–	XXX	2	38	3	HA	0.1	–	0.005	0.006
1,3	XXX	–	XXX	3	38	3	HA	0.1	–	0.005	0.006
1,5	XXX	–	XXX	3	38	3	HA	0.1	–	0.005	0.006
1,6	XXX	–	XXX	3	38	3	HA	0.1	–	0.005	0.006
1,7	XXX	–	XXX	3	38	3	HA	0.1	–	0.005	0.006
1,8	XXX	–	XXX	3	38	3	HA	0.1	–	0.005	0.006
1,9	XXX	–	XXX	4	38	3	HA	0.1	–	0.005	0.006
2	XXX	–	XXX	4	45	6	HB	0.1	–	0.01	0.011
2,5	XXX	–	XXX	4	45	6	HB	0.1	–	0.01	0.011
2,8	XXX	XXX	–	5	45	6	HB	0.13	0.1	0.02	0.025
3	XXX	XXX	XXX	5	45	6	HB	0.13	0.1	0.02	0.025
3,5	XXX	XXX	XXX	5	45	6	HB	0.13	0.1	0.02	0.025
3,8	XXX	XXX	–	7	45	6	HB	0.18	0.1	0.02	0.025
4	XXX	XXX	XXX	7	45	6	HB	0.18	0.1	0.02	0.025
4,5	XXX	XXX	XXX	7	45	6	HB	0.18	0.1	0.02	0.025
4,8	XXX	XXX	–	8	45	6	HB	0.2	0.1	0.03	0.04
5	XXX	XXX	XXX	8	45	6	HB	0.2	0.1	0.03	0.04
5,5	XXX	XXX	XXX	8	45	6	HB	0.2	0.1	0.03	0.04
5,75	XXX	XXX	XXX	8	45	6	HB	0.2	0.1	0.03	0.04
6	XXX	XXX	XXX	8	45	6	HB	0.2	0.1	0.04	0.05
6,75	XXX	XXX	XXX	10	55	8	HB	0.2	0.1	0.04	0.05
7	XXX	XXX	XXX	10	55	8	HB	0.2	0.1	0.04	0.05
7,75	XXX	XXX	XXX	10	55	8	HB	0.2	0.1	0.04	0.05
8	XXX	XXX	XXX	11	55	8	HB	0.2	0.1	0.05	0.08
8,7	XXX	XXX	XXX	11	55	10	HB	0.3	0.1	0.05	0.08
9	XXX	XXX	XXX	11	55	10	HB	0.3	0.1	0.05	0.08
9,7	XXX	XXX	XXX	11	55	10	HB	0.3	0.1	0.05	0.08
10	XXX	XXX	XXX	13	55	10	HB	0.3	0.1	0.06	0.09
11	XXX	XXX	–	15	60	12	HB	0.3	0.1	0.06	0.09
12	XXX	XXX	XXX	15	60	12	HB	0.3	0.1	0.07	0.1
14	XXX	XXX	XXX	15	60	14	HB	0.3	0.1	0.07	0.1
16	XXX	XXX	XXX	18	65	16	HB	0.4	0.1	0.08	0.13
20	XXX	XXX	XXX	22	75	20	HB	0.5	0.1	0.1	0.15

Solid carbide | Standard | Type N | e8 | 3 | 45° | a_e 0.5×D

DIN 6535 HA | DIN 6535 HB

Solid carbide mini milling cutter

Shank similar to **DIN 6535 HB**.

Save on regrinding costs:

It is cheaper to use solid carbide mini milling cutters to the wear limit than to regrind them.

20 2264/2265 – Improved coating for general-purpose applications in steel and cast iron.

20 2264

20 2265

20 2266

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	K						
20 2264/2265		280	200	**120**	**110**	**100**	**70**	60						**70**	50		**90**	●		●	●	○	●
20 2266	170	**140**	**100**	**70**	**60**	**45**								40			55	○		●	●	○	●

Ø e8 D_C	11X 20 2264 Garant	11X 20 2265	12X 20 2266 HOLEX	L_s	L_{tot}		Shank form	45° 20 2264	45° 20 2265	< 750 N f_z	< 750 N f_z
	Solid carbide mini milling cutter										
mm	AlCrN	AlCrN		mm	mm	mm		mm	mm	mm	mm
0,5	XXX	–	XXX	1.5	38	3	HA	–	–	0.003	0.003
0,6	XXX	–	XXX	1.5	38	3	HA	–	–	0.003	0.003
0,8	XXX	–	XXX	2	38	3	HA	–	–	0.003	0.003
1	XXX	–	XXX	2	38	3	HA	0.1	–	0.005	0.006
1,1	XXX	–	XXX	2	38	3	HA	0.1	–	0.005	0.006
1,2	XXX	–	XXX	2	38	3	HA	0.1	–	0.005	0.006
1,3	XXX	–	XXX	3	38	3	HA	0.1	–	0.005	0.006
1,5	XXX	–	XXX	3	38	3	HA	0.1	–	0.005	0.006
1,6	XXX	–	XXX	3	38	3	HA	0.1	–	0.005	0.006
1,7	XXX	–	XXX	3	38	3	HA	0.1	–	0.005	0.006
1,8	XXX	–	XXX	3	38	3	HA	0.1	–	0.005	0.006
1,9	XXX	–	XXX	4	38	3	HA	0.1	–	0.005	0.006
2	XXX	–	XXX	4	45	6	HB	0.1	–	0.01	0.011
2,5	XXX	–	XXX	4	45	6	HB	0.1	–	0.01	0.011
3	XXX	XXX	XXX	5	45	6	HB	0.13	0.1	0.02	0.025
3,5	XXX	XXX	XXX	5	45	6	HB	0.13	0.1	0.02	0.025
4	XXX	XXX	XXX	7	45	6	HB	0.18	0.1	0.02	0.025
4,5	XXX	XXX	XXX	7	45	6	HB	0.18	0.1	0.02	0.025
5	XXX	XXX	XXX	8	45	6	HB	0.2	0.1	0.03	0.04
5,5	XXX	XXX	XXX	8	45	6	HB	0.2	0.1	0.03	0.04
5,75	XXX	XXX	XXX	8	45	6	HB	0.2	0.1	0.03	0.04
6	XXX	XXX	XXX	8	45	6	HB	0.2	0.1	0.04	0.05
6,75	XXX	XXX	XXX	10	55	8	HB	0.2	0.1	0.04	0.05
7	XXX	XXX	XXX	10	55	8	HB	0.2	0.1	0.04	0.05
7,75	XXX	XXX	XXX	10	55	8	HB	0.2	0.1	0.04	0.05
8	XXX	XXX	XXX	11	55	8	HB	0.2	0.1	0.05	0.08
8,7	XXX	XXX	XXX	11	55	10	HB	0.3	0.1	0.05	0.08
9	XXX	XXX	XXX	11	55	10	HB	0.3	0.1	0.05	0.08
9,7	XXX	XXX	XXX	11	55	10	HB	0.3	0.1	0.05	0.08
10	XXX	XXX	XXX	13	55	10	HB	0.3	0.1	0.06	0.09
12	XXX	XXX	XXX	15	60	12	HB	0.3	0.1	0.07	0.1
14	XXX	XXX	XXX	15	60	14	HB	0.3	0.1	0.07	0.1
16	XXX	XXX	XXX	18	65	16	HB	0.4	0.1	0.08	0.13
20	XXX	XXX	XXX	22	75	20	HB	0.5	0.1	0.1	0.15

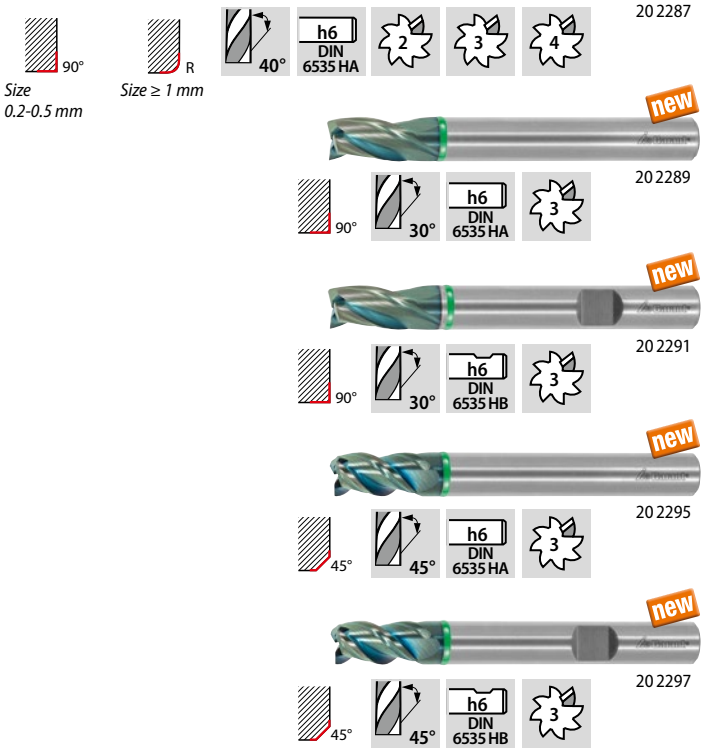
Solid carbide | Standard | Type N | e8 | a_e 0.5×D | h6 DIN 6535 HA | HPC

GARANT Master Titan solid carbide mini milling cutter / GARANT Master Steel solid carbide mini milling cutter

Extra short cutter for maximum stability.
Shank length to DIN for improved support of the tool in the holder.
This significantly increases the tool life.
Save the regrinding costs: It is cheaper to use a carbide mini slot drill to the limit of wear and throw it away, than to regrind it.

20 2287 – Attractively priced and extra stable version for **high-power machining of titanium.**
20 2289/2295 – Tool for **general-purpose machining.**

Note:
20 2289 – For **HB shanks** use order **no. 202291**.
20 2295 – For **HB shanks** use order **no. 202297**.
20 2289/2295 – HB shanks are available at the same price as HA.



Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	K						
20 2287																60			●				
20 2289/2295		290	240	140	120	100	70	50						90	70	40	85	●	●	○	●	●	

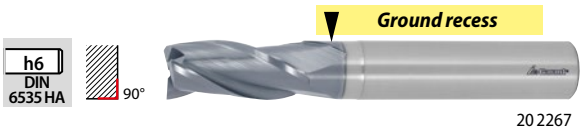
Ø e8 D_c	11Z 20 2287 GARANT Master Titan solid carbide mini-milling cutter	11X 20 2289 GARANT Master Steel solid carbide mini-milling cutter	11X 20 2295 GARANT Master Steel solid carbide mini-milling cutter	No. of teeth Z	L_s		L_{tot}				45°	R	< 900 N f_z	< 900 N f_z	Ti > 850 N f_z
	HPC			20 2287	20 2287 20 2295	20 2289	20 2287	20 2289 20 2295	20 2287	20 2289 20 2295	20 2295	20 2287	20 2289 20 2295	20 2289 20 2295	20 2287
mm	TiAlN	TiAlN	TiAlN		mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
0,2	XXX	XXX	–	2	0.6	0.6	44	38	4	3	–	–	0.002	0.003	0.002
0,5	XXX	XXX	–	2	1	1.5	44	38	4	3	–	–	0.002	0.003	0.003
0,6	–	XXX	–	–	–	1.5	–	38	–	3	–	–	0.003	0.005	–
0,8	–	XXX	XXX	–	2	2	–	38	–	3	0.01	–	0.003	0.005	–
1	XXX	XXX	XXX	2	2	2	44	38	4	3	0.02	0.02	0.005	0.006	0.005
1,1	–	–	XXX	–	2	–	–	38	–	3	0.02	–	0.005	0.006	–
1,2	–	XXX	XXX	–	2	2	–	38	–	3	0.02	–	0.005	0.006	–
1,3	–	–	XXX	–	3	–	–	38	–	3	0.02	–	0.005	0.006	–
1,4	–	–	XXX	–	3	–	–	38	–	3	0.02	–	0.005	0.006	–
1,5	XXX	XXX	XXX	2	3	3	44	38	4	3	0.02	0.02	0.005	0.006	0.006
1,8	–	XXX	XXX	–	3	3	–	38	–	3	0.02	–	0.005	0.006	–
2	XXX	XXX	XXX	3	4	4	50	50	6	6	0.03	0.03	0.01	0.012	0.01
2,5	–	XXX	XXX	–	5	5	–	50	–	6	0.03	–	0.01	0.012	–
3	XXX	XXX	XXX	3	6	6	50	50	6	6	0.03	0.03	0.02	0.022	0.012
3,5	–	XXX	XXX	–	6	6	–	50	–	6	0.03	–	0.02	0.022	–
4	XXX	XXX	XXX	3	7	7	50	50	6	6	0.03	0.03	0.02	0.022	0.02
4,5	–	XXX	XXX	–	8	8	–	50	–	6	0.03	–	0.025	0.028	–
5	XXX	XXX	XXX	3	8	8	50	50	6	6	0.04	0.04	0.025	0.028	0.025
5,5	–	XXX	XXX	–	8	8	–	50	–	6	0.04	–	0.025	0.028	–
6	XXX	XXX	XXX	3	10	10	50	50	6	6	0.04	0.04	0.03	0.035	0.03
8	XXX	XXX	XXX	3	13	13	55	55	8	8	0.05	0.05	0.04	0.045	0.035
10	XXX	XXX	XXX	4	16	16	66	66	10	10	0.05	0.05	0.05	0.06	0.04
12	XXX	XXX	XXX	4	16	16	73	73	12	12	0.05	0.05	0.06	0.07	0.05
16	–	XXX	XXX	–	18	18	–	82	–	16	0.06	–	0.08	0.09	–

Solid carbide | DIN 6527 | Type N | e8 | 3 | 30° | a_e 0.3×D

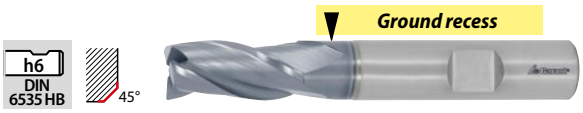
Solid carbide milling cutter

Dimensions similar to **DIN 6527**.
Improved coating for general-purpose applications in steel and cast iron.

Note:
20 2268 – **Successor product to No. 202080.**



20 2267



20 2268

20 2269

20 2275

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	K						
20 2267–20 2269		280	200	120	110	100	70	60						70	50		90	●		●	●	○	●
20 2275		200	160	100	80	70	50							60	40		75	○		●	●	○	●

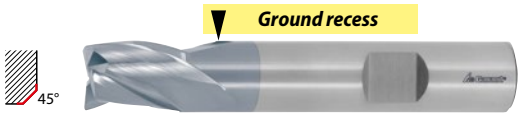
Ø e8 D_c	11X 20 2267	11X 20 2268	11X 20 2269	12X 20 2275	L_s	L_4	Ø D_4	L_{tot}		Shank form	45°	< 750 N f_z	< 750 N f_z
	Solid carbide milling cutter					20 2267 20 2268 20 2269	20 2267 20 2268 20 2269			20 2269	20 2268	20 2269 20 2275	
mm	AlCrN	AlCrN	AlCrN	AlCrN	mm	mm	mm	mm	mm		mm	mm	mm	mm
1	XXX	–	–	–	3	–	–	50	3	–	–	–	0.005	0.006
1,2	XXX	–	–	–	4	–	–	50	3	–	–	–	0.005	0.006
1,5	XXX	–	–	–	4	–	–	50	3	–	–	–	0.005	0.006
1,8	XXX	–	–	–	5	–	–	50	3	–	–	–	0.005	0.006
2	XXX	–	–	–	5	15	1.8	50	3	–	–	–	0.01	0.011
2,5	XXX	–	XXX	–	6	15	2.3	50	6	HA	–	0.1	0.01	0.011
2,8	XXX	XXX	XXX	–	8	15	2.6	57	6	HB	0.1	0.13	0.02	0.025
3	XXX	XXX	XXX	XXX	8	15	2.8	57	6	HB	0.1	0.13	0.02	0.025
3,5	XXX	XXX	XXX	XXX	11	15	3.3	57	6	HB	0.1	0.13	0.02	0.025
3,8	XXX	XXX	XXX	–	11	15	3.6	57	6	HB	0.1	0.18	0.02	0.025
4	XXX	XXX	XXX	XXX	11	15	3.8	57	6	HB	0.1	0.18	0.02	0.025
4,5	XXX	XXX	XXX	XXX	13	21	4.3	57	6	HB	0.1	0.18	0.02	0.025
4,8	XXX	XXX	XXX	–	13	21	4.6	57	6	HB	0.1	0.2	0.03	0.04
5	XXX	XXX	XXX	XXX	13	21	4.8	57	6	HB	0.1	0.2	0.03	0.04
5,5	XXX	XXX	XXX	XXX	13	21	5.3	57	6	HB	0.1	0.2	0.03	0.04
5,75	XXX	XXX	XXX	XXX	13	21	5.55	57	6	HB	0.1	0.2	0.03	0.04
6	XXX	XXX	XXX	XXX	13	21	5.8	57	6	HB	0.1	0.2	0.04	0.05
6,5	XXX	XXX	XXX	XXX	16	27	6.3	63	8	HB	0.1	0.2	0.04	0.05
7	XXX	XXX	XXX	XXX	16	27	6.8	63	8	HB	0.1	0.2	0.04	0.05
7,5	XXX	XXX	XXX	XXX	19	27	7.3	63	8	HB	0.1	0.2	0.04	0.05
8	XXX	XXX	XXX	XXX	19	27	7.8	63	8	HB	0.1	0.2	0.05	0.08
8,5	XXX	XXX	XXX	XXX	19	32	8.3	72	10	HB	0.1	0.3	0.05	0.08
9	XXX	XXX	XXX	XXX	19	32	8.8	72	10	HB	0.1	0.3	0.05	0.08
9,5	XXX	XXX	XXX	XXX	22	32	9.3	72	10	HB	0.1	0.3	0.05	0.08
10	XXX	XXX	XXX	XXX	22	32	9.8	72	10	HB	0.1	0.3	0.06	0.09
11	XXX	XXX	XXX	–	26	38	10.8	83	12	HB	0.1	0.3	0.06	0.09
12	XXX	XXX	XXX	XXX	26	38	11.8	83	12	HB	0.1	0.3	0.07	0.1
14	XXX	XXX	XXX	XXX	26	38	13.8	83	14	HB	0.1	0.3	0.07	0.1
16	XXX	XXX	XXX	XXX	32	44	15.7	92	16	HB	0.1	0.4	0.08	0.13
18	XXX	XXX	XXX	XXX	32	44	17.7	92	18	HB	0.1	0.4	0.09	0.15
20	XXX	XXX	XXX	XXX	38	54	19.7	104	20	HB	0.1	0.5	0.1	0.15

Solid carbide | DIN 6527 | Type N | e8 | 3 | 30° | a_e 0.3×D | h6 DIN 6535 HA | h6 DIN 6535 HB

Solid carbide milling cutter

Dimensions similar to **DIN 6527**.

20 2285 – Improved coating for general-purpose applications in steel and cast iron.



20 2285

20 2276

20 2277

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	K						
20 2285		280	200	**120**	**110**	**100**	**70**	60						**70**	50		**90**	●		●	●	○	●
20 2276/2277	170	**140**	**100**	**70**	**60**	**45**								40			55	○		●	●	○	●

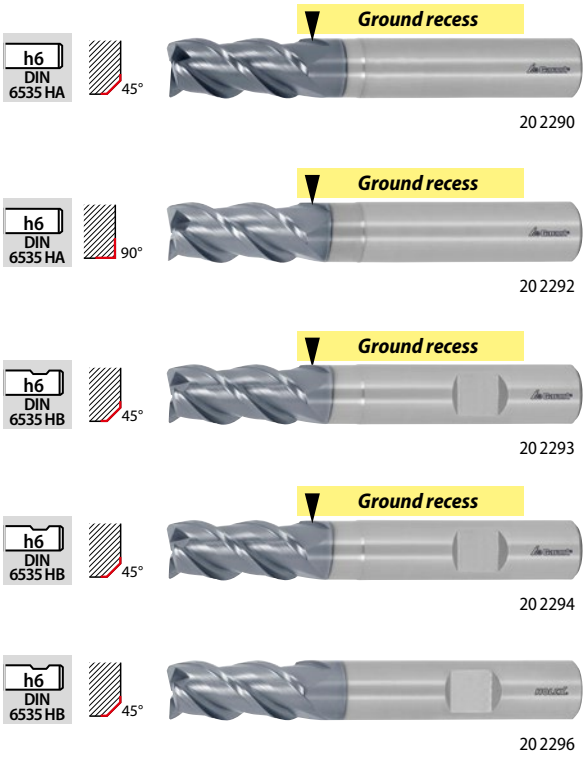
∅ e8 D_c	11X 20 2285 Garant	12X 20 2276 HOLEX	12X 20 2277	L_s		L_4	∅ D_4	L_{tot}			Shank form	45°		< 750 N f_z	< 750 N f_z
	Solid carbide milling cutter			20 2285 20 2276	20 2277	20 2285	20 2285	20 2285 20 2276	20 2277			20 2285	20 2276 20 2277		
mm	AlCrN			mm	mm	mm	mm	mm	mm	mm		mm	mm	mm	mm
1	XXX	XXX	XXX	3	3	–	–	38	50	3	HA	0.1	0.1	0.005	0.006
1,2	XXX	XXX	XXX	3	4	–	–	38	50	3	HA	0.1	0.1	0.005	0.006
1,5	XXX	XXX	XXX	3	4	–	–	38	50	3	HA	0.1	0.1	0.005	0.006
1,8	XXX	XXX	XXX	3	5	–	–	38	50	3	HA	0.1	0.1	0.005	0.006
2	XXX	XXX	XXX	4	5	–	–	38	50	3	HA	0.1	0.1	0.01	0.011
2,5	XXX	XXX	XXX	4	6	10	2.3	50	50	6	HB	0.1	0.1	0.01	0.011
3	XXX	XXX	XXX	5	8	12	2.8	50	57	6	HB	0.1	0.13	0.02	0.025
3,5	XXX	XXX	XXX	6	11	13	3.3	54	57	6	HB	0.1	0.13	0.02	0.025
4	XXX	XXX	XXX	8	11	15	3.8	54	57	6	HB	0.1	0.18	0.02	0.025
4,5	XXX	XXX	XXX	9	13	15	4.3	54	57	6	HB	0.1	0.18	0.02	0.025
5	XXX	XXX	XXX	9	13	16	4.8	54	57	6	HB	0.1	0.2	0.03	0.04
5,5	XXX	XXX	XXX	10	13	17	5.3	54	57	6	HB	0.1	0.2	0.03	0.04
5,75	XXX	XXX	XXX	10	13	17	5.55	54	57	6	HB	0.1	0.2	0.03	0.04
6	XXX	XXX	XXX	10	13	17	5.8	54	57	6	HB	0.1	0.2	0.04	0.05
8	XXX	XXX	XXX	12	19	20	7.8	58	63	8	HB	0.1	0.2	0.05	0.08
10	XXX	XXX	XXX	14	22	24	9.8	66	72	10	HB	0.1	0.3	0.06	0.09
12	XXX	XXX	XXX	16	26	26	11.8	73	83	12	HB	0.1	0.3	0.07	0.1
14	XXX	XXX	XXX	18	26	28	13.8	75	83	14	HB	0.1	0.3	0.07	0.1
16	XXX	XXX	XXX	22	32	32	15.7	82	92	16	HB	0.1	0.4	0.08	0.13
18	XXX	XXX	XXX	24	32	34	17.7	84	92	18	HB	0.1	0.4	0.09	0.15
20	XXX	XXX	XXX	26	38	40	19.7	92	104	20	HB	0.1	0.5	0.1	0.15

Solid carbide | DIN 6527 | Type N | e8 | 3 | 45° | a_e 0.5×D

Solid carbide milling cutter

Dimensions similar to **DIN 6527**.
Improved coating for general-purpose applications in steel and cast iron.

Note:
20 2293 – **Successor product to No. 202320.**



Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	K						
20 2290–20 2294		280	200	120	110	100	70	60						70	50		90	●		●	●	○	●
20 2296		200	160	100	80	70	50							60	40		75	○		●	●	○	●

∅ e8 D_c	11X 20 2290 Garant	11X 20 2292 Garant	11X 20 2293 Garant	11X 20 2294 Garant	12X 20 2296 HOLEX	L_s	L_4	∅ D_4	L_{tot}		Shank form	45°		< 750 N f_z	< 750 N f_z
	Solid carbide milling cutter						20 2290 20 2292 20 2293 20 2294	20 2290 20 2292 20 2293 20 2294			20 2294	20 2290 20 2294 20 2296	20 2293		
mm	AlCrN	AlCrN	AlCrN	AlCrN	AlCrN	mm	mm	mm	mm	mm		mm	mm	mm	mm
1	XXX	XXX	–	–	–	3	–	–	50	3	–	0.1	–	0.005	0.006
1,2	XXX	XXX	–	–	–	4	–	–	50	3	–	0.1	–	0.005	0.006
1,5	XXX	XXX	–	–	–	4	–	–	50	3	–	0.1	–	0.005	0.006
1,8	XXX	XXX	–	–	–	5	–	–	50	3	–	0.1	–	0.005	0.006
2	XXX	XXX	–	–	–	5	15	1.8	50	3	–	0.1	–	0.01	0.011
2,5	XXX	XXX	–	XXX	–	6	15	2.3	50	6	HB	0.1	–	0.01	0.011
3	XXX	XXX	XXX	XXX	XXX	8	15	2.8	57	6	HB	0.13	0.1	0.02	0.025
3,5	XXX	XXX	XXX	XXX	XXX	11	15	3.3	57	6	HB	0.13	0.1	0.02	0.025
4	XXX	XXX	XXX	XXX	XXX	11	15	3.8	57	6	HB	0.18	0.1	0.02	0.025
4,5	XXX	XXX	XXX	XXX	XXX	13	21	4.3	57	6	HB	0.18	0.1	0.02	0.025
5	XXX	XXX	XXX	XXX	XXX	13	21	4.8	57	6	HB	0.2	0.1	0.03	0.04
5,5	XXX	XXX	XXX	XXX	XXX	13	21	5.3	57	6	HB	0.2	0.1	0.03	0.04
5,75	XXX	XXX	XXX	XXX	XXX	13	21	5.55	57	6	HB	0.2	0.1	0.03	0.04
6	XXX	XXX	XXX	XXX	XXX	13	21	5.8	57	6	HB	0.2	0.1	0.04	0.05
6,5	XXX	XXX	XXX	XXX	XXX	16	27	6.3	63	8	HB	0.2	0.1	0.04	0.05
7	XXX	XXX	XXX	XXX	XXX	16	27	6.8	63	8	HB	0.2	0.1	0.04	0.05
7,5	XXX	XXX	XXX	XXX	XXX	19	27	7.3	63	8	HB	0.2	0.1	0.04	0.05
8	XXX	XXX	XXX	XXX	XXX	19	27	7.8	63	8	HB	0.2	0.1	0.05	0.08
8,5	XXX	XXX	XXX	XXX	XXX	19	32	8.3	72	10	HB	0.3	0.1	0.05	0.08
9	XXX	XXX	XXX	XXX	XXX	19	32	8.8	72	10	HB	0.3	0.1	0.05	0.08
9,5	XXX	XXX	XXX	XXX	XXX	22	32	9.3	72	10	HB	0.3	0.1	0.05	0.08
10	XXX	XXX	XXX	XXX	XXX	22	32	9.8	72	10	HB	0.3	0.1	0.06	0.09
12	XXX	XXX	XXX	XXX	XXX	26	38	11.8	83	12	HB	0.3	0.1	0.07	0.1
14	XXX	XXX	XXX	XXX	XXX	26	38	13.8	83	14	HB	0.3	0.1	0.07	0.1
16	XXX	XXX	XXX	XXX	XXX	32	44	15.7	92	16	HB	0.4	0.1	0.08	0.13
18	XXX	XXX	XXX	XXX	XXX	32	44	17.7	92	18	HB	0.4	0.1	0.09	0.15
20	XXX	XXX	XXX	XXX	XXX	38	54	19.7	104	20	HB	0.5	0.1	0.1	0.15

Solid carbide | DIN 6527 | Type N | e8 | 3 | 45° | a_e 0.5×D | h6 DIN 6535 HA | h6 DIN 6535 HB

Solid carbide milling cutter

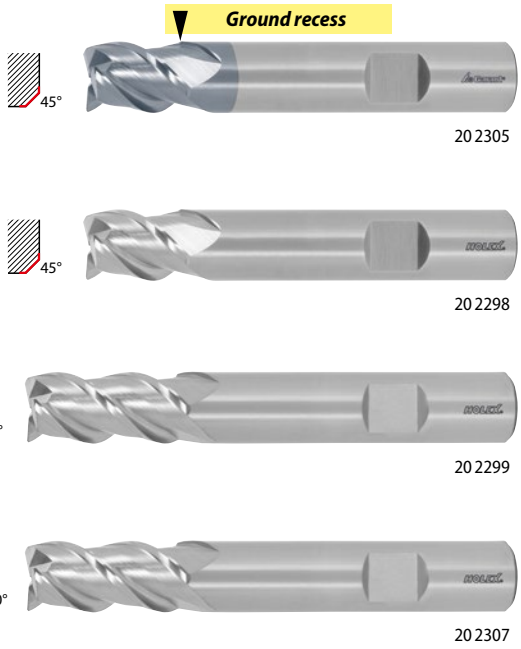
Dimensions similar to **DIN 6527**.

20 2305 – Improved coating for general-purpose applications in steel and cast iron.

Note:

20 2305 – **Successor product to No. 202210.**

20 2307 – **Successor product to No. 202240 / 202245.**



Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	Uni
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	K	
20 2305		280	200	**120**	**110**	**100**	**70**	60						**70**	50		**90**	●
20 2298–20 2307	170	**140**	**100**	**70**	**60**	**45**								40			55	○

∅ e8 D_c	1X 20 2305 Garant	2X 20 2298 HOLEX	2X 20 2299 HOLEX	2X 20 2307 HOLEX	L_s	L_4	∅ D_4	L_{tot}		Shank form	45°	< 750 N f_z	< 750 N f_z
	Solid carbide milling cutter				20 2305 20 2298	20 2299 20 2307	20 2305	20 2305	20 2305 20 2298	20 2299 20 2307			20 2305	20 2298 20 2299		
mm	AlCrN				mm	mm	mm	mm	mm	mm	mm		mm	mm	mm	mm
1					3	3	–	–	38	50	3	HA	0.1	0.1	0.005	0.006
1,2				XXX	3	4	–	–	38	50	3	HA	0.1	0.1	0.005	0.006
1,5	XXX	XXX	XXX	XXX	3	4	–	–	38	50	3	HA	0.1	0.1	0.005	0.006
1,8	XXX	XXX	XXX	XXX	3	5	–	–	38	50	3	HA	0.1	0.1	0.005	0.006
2	XXX	XXX	XXX	XXX	4	5	–	–	38	50	3	HA	0.1	0.1	0.01	0.011
2,5	XXX	XXX	XXX	XXX	4	6	10	2.3	50	50	6	HB	0.1	0.1	0.01	0.011
3	XXX	XXX	XXX	XXX	5	8	12	2.8	50	57	6	HB	0.1	0.13	0.02	0.025
3,5	XXX	XXX	XXX	XXX	6	11	13	3.3	54	57	6	HB	0.1	0.13	0.02	0.025
4	XXX	XXX	XXX	XXX	8	11	15	3.8	54	57	6	HB	0.1	0.18	0.02	0.025
4,5	XXX	XXX	XXX	XXX	9	13	15	4.3	54	57	6	HB	0.1	0.18	0.02	0.025
5	XXX	XXX	XXX	XXX	9	13	16	4.8	54	57	6	HB	0.1	0.2	0.03	0.04
5,5	XXX	XXX	XXX	XXX	10	13	17	5.3	54	57	6	HB	0.1	0.2	0.03	0.04
5,75	XXX	XXX	XXX	XXX	10	13	17	5.55	54	57	6	HB	0.1	0.2	0.03	0.04
6	XXX	XXX	XXX	XXX	10	13	17	5.8	54	57	6	HB	0.1	0.2	0.04	0.05
6,5	–	–	–	XXX	–	16	–	–	–	63	8	HB	–	–	0.04	0.05
7	–	–	–	XXX	–	16	–	–	–	63	8	HB	–	–	0.04	0.06
7,5	–	–	–	XXX	–	19	–	–	–	63	8	HB	–	–	0.05	0.07
8	XXX	XXX	XXX	XXX	12	19	20	7.8	58	63	8	HB	0.1	0.2	0.05	0.08
8,5	–	–	–	XXX	–	19	–	–	–	72	10	HB	–	–	0.05	0.08
9	–	–	–	XXX	–	19	–	–	–	72	10	HB	–	–	0.05	0.08
9,5	–	–	–	XXX	–	22	–	–	–	72	10	HB	–	–	0.06	0.09
10	XXX	XXX	XXX	XXX	14	22	24	9.8	66	72	10	HB	0.1	0.3	0.06	0.09
12	XXX	XXX	XXX	XXX	16	26	26	11.8	73	83	12	HB	0.1	0.3	0.07	0.1
14	XXX	XXX	XXX	XXX	18	26	28	13.8	75	83	14	HB	0.1	0.3	0.07	0.1
16	XXX	XXX	XXX	XXX	22	32	32	15.7	82	92	16	HB	0.1	0.4	0.08	0.13
18	XXX	XXX	XXX	XXX	24	32	34	17.7	84	92	18	HB	0.1	0.4	0.09	0.15
20	XXX	XXX	XXX	XXX	26	38	40	19.7	92	104	20	HB	0.1	0.5	0.1	0.15

Solid carbide | Type N | h10 | 3 | 40° | ≠ | ≠ | h6 DIN 6535 HB | HPC

GARANT Master INOX HPC solid carbide milling cutter

For roughing and finishing
HPC milling cutters with **newly developed high-performance coating** for **outstanding service life** and **optimum metal removal rates** in a wide range of stainless steels.
Greater oxidation resistance and **high-temperature hardness**.
Can be used at **high cutting speeds**, particularly suitable even for TOOLOX®.
20 2387 – Dimensions similar to **DIN 6527**.

a_e 0.5×D | DIN 6527 | 45°

Ground recess

20 2387

a_e 0.3×D | Standard | 45°

Ground recess

20 2389

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	TOOLOX® 33 HRC	TOOLOX® 44 HRC	INOX < 900 N	INOX > 900 N	Uni				
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	H	H	M	M					
20 2387				250	230	200	170	170						115	80	110	90	○		●	●	○	●
20 2389				240	220	180	150	150						115	80	100	85	○		●	●	○	●

Ø h10 D_c	1 X 20 2387	1 X 20 2389	L_s		L_4		Ø D_4		L_{tot}			45°	INOX > 900 N f_z	INOX > 900 N f_z
	GARANT Master INOX solid carbide milling cutter													
	HPC		20 2387	20 2389	20 2387	20 2389	20 2387	20 2389	20 2387	20 2389				
mm	TiAlN	TiAlN	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
1	XXX	XXX	2.5	3	5	13	0.9	0.9	57	57	6	0.05	0.01	0.012
1,5	XXX	–	4	–	7.5	–	1.44	–	57	–	6	0.05	0.01	0.012
2	XXX	XXX	5	5	10	15	1.92	1.44	57	57	6	0.05	0.02	0.024
2,5	XXX	–	6	–	12.5	–	2.4	–	57	–	6	0.05	0.02	0.024
3	XXX	XXX	8	8	15	20	2.9	2.9	57	57	6	0.05	0.02	0.024
3,5	XXX	–	11	–	16	–	3.4	–	57	–	6	0.05	0.02	0.024
4	XXX	XXX	11	16	16	24	3.9	3.9	57	62	6	0.1	0.02	0.024
4,5	XXX	–	13	–	19	–	4.4	–	57	–	6	0.1	0.04	0.048
5	XXX	XXX	13	17	19	24	4.9	4.9	57	62	6	0.1	0.04	0.048
5,5	XXX	–	13	–	19	–	5.4	–	57	–	6	0.1	0.04	0.048
6	XXX	XXX	13	18	19	24	5.9	5.9	57	62	6	0.1	0.04	0.048
7	XXX	–	19	–	25	–	6.8	–	63	–	8	0.1	0.04	0.048
7,5	XXX	–	19	–	25	–	7.3	–	63	–	8	0.1	0.04	0.048
8	XXX	XXX	19	24	25	30	7.8	7.8	63	70	8	0.1	0.04	0.048
9	XXX	–	22	–	30	–	8.7	–	72	–	10	0.1	0.06	0.072
10	XXX	XXX	22	30	30	38	9.7	9.7	72	80	10	0.1	0.06	0.072
12	XXX	XXX	26	36	36	46	11.7	11.7	83	93	12	0.1	0.06	0.072
14	XXX	–	26	–	36	–	13.7	–	83	–	14	0.15	0.08	0.096
16	XXX	XXX	32	48	42	58	15.5	15.5	92	108	16	0.2	0.08	0.096
20	XXX	XXX	38	60	52	74	19.5	19.5	104	124	20	0.2	0.1	0.12

Solid carbide | Standard | Type N | e8 | 3 | 35° | ≠ | ≠ | h6 DIN 6535 HB | HPC

HOLEX Pro INOX solid carbide HPC milling cutters

HPC milling cutter with **newly developed high-performance coating** for **outstanding tool life** and **optimum metal removal rate** in a wide range of stainless steels.
Can be used at **high cutting speeds**, highly suitable even for steels up to approx. 1100 N/mm².

a_e 0.5×D | 45°

Ground recess

20 2378

a_e 0.3×D | 45°

Ground recess

20 2382

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	TOOLOX® 33 HRC	TOOLOX® 44 HRC	INOX < 900 N	INOX > 900 N	Uni				
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	H	H	M	M					
20 2378				240	220	180	180	150						115	80	100	85	○		●	●	○	○
20 2382				215	200	160	160	135						100	70	90	75	○		●	●	○	○

Ø e8 D_c	12 X 20 2378	12 X 20 2382	L_s		L_4		Ø D_4	L_{tot}			45°	INOX > 900 N f_z	INOX > 900 N f_z
	HOLEX Pro INOX solid carbide milling cutter												
	HPC		20 2378	20 2382	20 2378	20 2382		20 2378	20 2382				
mm	AlCrN	AlCrN	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
3	XXX	–	8	–	13	–	2.8	57	–	6	0.1	0.012	0.015
4	XXX	–	11	–	17	–	3.8	57	–	6	0.1	0.012	0.015
5	XXX	–	13	–	19	–	4.8	57	–	6	0.1	0.025	0.025
6	XXX	XXX	13	18	19	24	5.8	57	62	6	0.1	0.025	0.03
7	XXX	–	21	–	25	–	6.7	63	–	8	0.2	0.025	0.04
8	XXX	XXX	21	24	25	30	7.7	63	68	8	0.2	0.025	0.04
9	XXX	–	22	–	30	–	8.7	72	–	10	0.2	0.04	0.045
10	XXX	XXX	22	30	30	38	9.7	72	80	10	0.2	0.04	0.045
12	XXX	XXX	26	36	36	46	11.6	83	93	12	0.3	0.04	0.05
14	XXX	–	26	–	36	–	13.6	83	–	14	0.3	0.05	0.055
16	XXX	XXX	36	48	42	58	15.5	92	108	16	0.3	0.05	0.055
20	XXX	XXX	41	60	52	74	19.5	104	126	20	0.3	0.07	0.08

Solid carbide | Type N | f8 | MTC

Garant Solid carbide milling cutter MTC

Special flute profile. Strengthened core.
MTC rough milling up to 1.5×D in solid material.
Eccentric relief ground.

20 2391 – Particularly sturdy due to short overall length. Overall length similar to **DIN 6527 short.**

20 2396/2399 – Improved coating for a further reduction in cutting force combined with increased tool life.

20 2392/2396 – Lengths similar to **DIN 6527 long**.

Application: Especially for **MTC (Multi Task Cutting)** use on the new generation of turning / milling centres.

h6 DIN 6535 HA | G 2.5 n_{max} | a_e 0.5×D | DIN 6527 | 90° ≤ 1.5 mm | 45° ≥ 2 mm

20 2391

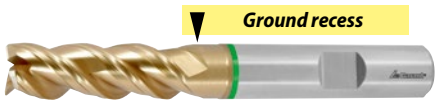
h6 DIN 6535 HB | G 2.5 n_{max} | a_e 0.5×D | DIN 6527 | 90° ≤ 1,5 mm | 45° ≥ 2 mm

20 2392

h6 DIN 6535 HB | G 2.5 n_{max} | a_e 0.5×D | DIN 6527 | 90° ≤ 1,5 mm | 45° ≥ 2 mm

20 2396

h6 DIN 6535 HB | G 2.5 n_{max} | a_e 0.3×D | Standard | 45°



20 2394

h6 DIN 6535 HB | G 2.5 n_{max} | a_e 0.3×D | Standard | 45°

20 2399

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	K						
20 2391–20 2399				250	220	200	190	170	90	60				130	100	50	160	●		●	○	●	●

Ø f8 D_c	11X 20 2391	11X 20 2392	11X 20 2396	L_s		L_4		Ø D_4		L_{tot}			45°		< 900 N f_z	< 900 N f_z
	Solid carbide milling cutter			20 2391	20 2392 20 2396	20 2391	20 2392 20 2396	20 2391	20 2392 20 2396	20 2391	20 2392 20 2396		20 2391	20 2392 20 2396		
	TPC															
mm	AlCrN	SiTiN	AlCrN	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
1	–	XXX	XXX	–	2.5	–	5	–	0.95	–	57	6	–	–	0.01	0.012
1,5	XXX	XXX	XXX	3	4	–	7.5	–	1.44	38	57	6	–	–	0.01	0.012
2	XXX	XXX	XXX	4	5	–	10	–	1.92	38	57	6	0.05	0.05	0.02	0.024
2,5	XXX	XXX	XXX	4	6.5	10	12.5	2.3	2.4	50	57	6	0.05	0.05	0.02	0.024
3	XXX	XXX	XXX	5	8	12	15	2.8	2.9	50	57	6	0.08	0.1	0.02	0.024
3,5	XXX	XXX	XXX	6	11	13	16	3.3	3.4	54	57	6	0.08	0.1	0.02	0.024
4	XXX	XXX	XXX	8	11	15	16	3.8	3.9	54	57	6	0.08	0.1	0.02	0.024
4,5	XXX	XXX	XXX	9	13	15	19	4.3	4.4	54	57	6	0.08	0.1	0.04	0.048
5	XXX	XXX	XXX	9	13	16	19	4.8	4.9	54	57	6	0.08	0.1	0.04	0.048
5,5	XXX	XXX	XXX	10	13	17	19	5.3	5.4	54	57	6	0.08	0.1	0.04	0.048
6	XXX	XXX	XXX	12	13	17	19	5.8	5.9	54	57	6	0.15	0.2	0.04	0.048
6,5	–	XXX	XXX	–	19	–	25	–	6.3	–	63	8	–	0.2	0.04	0.048
7	–	XXX	XXX	–	19	–	25	–	6.8	–	63	8	–	0.2	0.04	0.048
7,5	–	XXX	XXX	–	19	–	25	–	7.3	–	63	8	–	0.2	0.04	0.048
8	XXX	XXX	XXX	12	19	20	25	7.8	7.8	58	63	8	0.15	0.2	0.04	0.048
8,5	–	XXX	XXX	–	22	–	30	–	8.2	–	72	10	–	0.2	0.06	0.072
9	–	XXX	XXX	–	22	–	30	–	8.7	–	72	10	–	0.2	0.06	0.072
9,5	–	XXX	XXX	–	22	–	30	–	9.2	–	72	10	–	0.2	0.06	0.072
10	XXX	XXX	XXX	14	22	24	30	9.8	9.7	66	72	10	0.15	0.2	0.06	0.072
12	XXX	XXX	XXX	16	26	26	36	11.8	11.7	73	83	12	0.15	0.2	0.06	0.072
14	–	XXX	XXX	–	26	–	36	–	13.7	–	83	14	–	0.2	0.08	0.096
16	–	XXX	XXX	–	32	–	42	–	15.5	–	92	16	–	0.2	0.08	0.096
20	–	XXX	XXX	–	38	–	52	–	19.5	–	104	20	–	0.2	0.1	0.12

Ø f8 D_c	11X 20 2394	11X 20 2399	L_s	L_4	Ø D_4	L_{tot}		45°	< 900 N f_z	< 900 N f_z
	Solid carbide milling cutter									
	MTC									
mm	SiTiN	AlCrN	mm	mm	mm	mm	mm	mm	mm	mm
4	XXX	XXX	16	24	3.9	62	6	0.1	0.02	0.024
5	XXX	XXX	17	24	4.9	62	6	0.1	0.04	0.048
6	XXX	XXX	18	24	5.9	62	6	0.2	0.04	0.048
8	XXX	XXX	24	30	7.8	68	8	0.2	0.04	0.048
10	XXX	XXX	30	38	9.7	80	10	0.2	0.06	0.072
12	XXX	XXX	36	46	11.7	93	12	0.2	0.06	0.072
16	XXX	XXX	48	58	15.5	108	16	0.2	0.08	0.096
20	XXX	XXX	60	74	19.5	126	20	0.2	0.1	0.12

Solid carbide | Type N | f8 | 3 | 38° | ≠ | ≠ | | | a_e 0.4×D | h6 DIN 6535 HB | HPC

Garant

Master Steel PickPocket solid carbide roughing end mill HPC

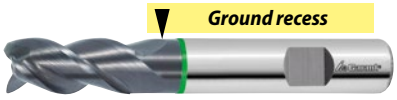
For **roughing and finishing**
With corner radii similar to torus cutters.
Up to 1×D into solid material **at very high feed rates** with smooth cutting action.
20 2402 – Corner radii matched to DIN specifications for **drive keyways**.
Advantage: Optimised flute form, eccentric relief ground, wide chip space.

DIN 6527 R

20 2402

DIN 6527 R

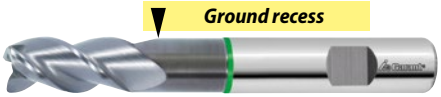
Ground recess



20 2404

Standard R

Ground recess



20 2406

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	< 900 N	> 900 N	> 850 N	GG(G)	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	K						
20 2402–20 2406				260	240	190	180	150						80	70		250	●		●	○	●	●

Ø f8 D_c	11X 20 2402	11X 20 2404	L_s	L_4	Ø D_4	L_{tot}		R		< 900 N f_z	< 900 N f_z
	Master Steel PickPocket solid carbide roughing end mill										
	HPC		20 2402	20 2404	20 2404	20 2404	20 2402	20 2404		20 2402	20 2404		
mm	TiAlN	TiAlN	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
3,8	XXX	XXX	5	10	–	–	54	57	6	0.12	0.19	0.03	0.04
4	XXX	XXX	5	11	–	–	54	57	6	0.12	0.2	0.03	0.04
4,8	XXX	XXX	6	11	–	–	54	57	6	0.2	0.24	0.04	0.05
5	XXX	XXX	6	13	–	–	54	57	6	0.2	0.25	0.04	0.05
5,7	XXX	XXX	7	13	19	5.5	54	57	6	0.2	0.29	0.04	0.05
6	XXX	XXX	7	13	19	5.8	54	57	6	0.2	0.3	0.04	0.05
6,7	XXX	XXX	8	16	25	6.5	58	63	8	0.2	0.34	0.04	0.05
7	XXX	XXX	8	16	25	6.8	58	63	8	0.2	0.35	0.04	0.05
7,7	XXX	XXX	9	19	25	7.5	58	63	8	0.2	0.39	0.05	0.06
8	XXX	XXX	9	19	25	7.8	58	63	8	0.2	0.4	0.05	0.06
8,7	XXX	XXX	10	22	30	8.5	66	72	10	0.32	0.44	0.06	0.08
9	XXX	XXX	10	22	30	8.8	66	72	10	0.32	0.45	0.06	0.08
9,7	XXX	XXX	11	22	30	9.5	66	72	10	0.32	0.49	0.06	0.08
10	XXX	XXX	11	22	30	9.8	66	72	10	0.32	0.5	0.06	0.08
11,7	XXX	XXX	12	26	36	11.5	73	83	12	0.32	0.59	0.07	0.09
12	XXX	XXX	12	26	36	11.8	73	83	12	0.32	0.6	0.07	0.09
13,7	XXX	XXX	14	26	36	13.5	75	83	14	0.32	0.69	0.08	0.1
14	XXX	XXX	14	26	36	13.8	75	83	14	0.32	0.7	0.08	0.1
15,5	XXX	XXX	16	31	42	15.3	82	92	16	0.32	0.78	0.08	0.1
16	XXX	XXX	16	31	42	15.8	82	92	16	0.32	0.8	0.08	0.1
17,5	XXX	XXX	18	31	42	17.3	84	92	18	0.32	0.88	0.1	0.13
18	XXX	XXX	18	31	42	17.8	84	92	18	0.32	0.9	0.1	0.13
19,5	XXX	XXX	20	41	52	19.3	92	104	20	0.5	0.98	0.1	0.13
20	XXX	XXX	20	41	52	19.8	92	104	20	0.5	1	0.1	0.13

Ø f8 D_c	11X 20 2406	L_s	L_4	Ø D_4	L_{tot}		R	< 900 N f_z	< 900 N f_z
	Master Steel PickPocket solid carbide roughing end mill								
	HPC								
mm	TiAlN	mm	mm	mm	mm	mm	mm	mm	mm
5,7	XXX	13	24	5.5	62	6	0.29	0.04	0.05
6	XXX	13	24	5.8	62	6	0.3	0.04	0.05
6,7	XXX	16	30	6.4	68	8	0.34	0.04	0.05
7	XXX	16	30	6.7	68	8	0.35	0.04	0.05
7,7	XXX	21	30	7.4	68	8	0.39	0.05	0.06
8	XXX	21	30	7.7	68	8	0.4	0.05	0.06
8,7	XXX	22	38	8.4	80	10	0.44	0.06	0.08
9	XXX	22	38	8.7	80	10	0.45	0.06	0.08
9,7	XXX	22	38	9.4	80	10	0.49	0.06	0.08
10	XXX	22	38	9.7	80	10	0.5	0.06	0.08
11,7	XXX	26	46	11.3	93	12	0.59	0.07	0.09
12	XXX	26	46	11.6	93	12	0.6	0.07	0.09
13,7	XXX	26	52	13.3	99	14	0.69	0.08	0.1
14	XXX	26	52	13.6	99	14	0.7	0.08	0.1
15,5	XXX	36	58	15	108	16	0.78	0.08	0.1
16	XXX	36	58	15.5	108	16	0.8	0.08	0.1
17,5	XXX	36	67	17	117	18	0.88	0.1	0.13
18	XXX	36	67	17.5	117	18	0.9	0.1	0.13
19,5	XXX	41	74	19	126	20	0.98	0.1	0.13
20	XXX	41	74	19.5	126	20	1	0.1	0.13

Solid carbide | Standard | Type N | 0 –0.03 | 3 | 45° | ≠ | ≠ | | a_e 0.4×D | h6 DIN 6535 HB | HPC

HOLEX Pro Steel solid carbide roughing end mill HPC

For **roughing and finishing.**
Up to 1×D into solid material **at very high feed rates** with smooth cutting action.
Advantage: Optimised flute form, eccentric relief ground, wide chip space.

20 2414

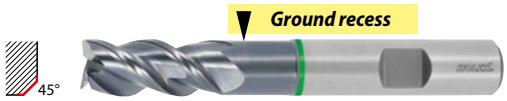
Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GGG	Uni				
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	K					
20 2414				240	220	170	150							80			190	●	●	○	●	●

∅ D_C	12X	20 2414	L_S	L_4	∅ D_4	L_{tot}		45°	< 900 N f_z	< 900 N f_z
		Pro Steel solid carbide roughing end mill HPC								
mm		TiAlN	mm	mm	mm	mm	mm	mm	mm	mm
3		XXX	8	12	2.8	57	6	0.13	0.02	0.025
4		XXX	11	15	3.8	57	6	0.18	0.02	0.025
5		XXX	13	17	4.8	57	6	0.2	0.04	0.05
5,7		XXX	13	21	5.2	57	6	0.2	0.04	0.05
6		XXX	13	21	5.5	57	6	0.2	0.04	0.05
7,7		XXX	19	27	7.2	63	8	0.2	0.05	0.06
8		XXX	19	27	7.5	63	8	0.2	0.05	0.06
9,7		XXX	22	32	9.2	72	10	0.3	0.06	0.08
10		XXX	22	32	9.5	72	10	0.3	0.06	0.08
11,7		XXX	26	38	11.2	83	12	0.3	0.07	0.09
12		XXX	26	38	11.5	83	12	0.3	0.07	0.09
13,7		XXX	26	42	13.2	83	14	0.3	0.08	0.1
14		XXX	26	42	13.5	83	14	0.3	0.08	0.1
15,6		XXX	32	44	15.1	92	16	0.4	0.08	0.1
16		XXX	32	44	15.5	92	16	0.4	0.08	0.1
17,5		XXX	32	50	17	92	18	0.4	0.1	0.13
18		XXX	32	50	17.5	92	18	0.4	0.1	0.13
19,5		XXX	38	54	19	104	20	0.5	0.1	0.13
20		XXX	38	54	19.5	104	20	0.5	0.1	0.13

Solid carbide | Standard | Type N | 0 –0.03 | 3 | 45° | ≠ | ≠ | | a_e 0.3×D | h6 DIN 6535 HB | HPC

HOLEX Pro Steel solid carbide roughing end mill HPC

For **roughing and finishing.**
Up to 0.7×D into solid material **at very high feed rates** with smooth cutting action.
Advantage: Optimised flute form, eccentric relief ground, wide chip space.



20 2416

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GGG	Uni				
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	K					
20 2416				240	220	170	150							80			190	●	●	○	●	●

∅ D_C	12X	20 2416	L_S	L_4	∅ D_4	L_{tot}		45°	< 900 N f_z	< 900 N f_z
		Pro Steel solid carbide roughing end mill HPC								
mm		TiAlN	mm	mm	mm	mm	mm	mm	mm	mm
5		XXX	13	25	4.8	62	6	0.2	0.03	0.05
5,7		XXX	13	25	5.2	62	6	0.2	0.03	0.05
6		XXX	13	25	5.5	62	6	0.2	0.03	0.05
7,7		XXX	19	32	7.2	68	8	0.2	0.04	0.06
8		XXX	19	32	7.5	68	8	0.2	0.04	0.06
9,7		XXX	22	40	9.2	80	10	0.3	0.05	0.08
10		XXX	22	40	9.5	80	10	0.3	0.05	0.08
11,7		XXX	26	48	11.2	93	12	0.3	0.06	0.09
12		XXX	26	48	11.5	93	12	0.3	0.06	0.09
15,6		XXX	32	56	15.1	108	16	0.4	0.07	0.1
16		XXX	32	56	15.5	108	16	0.4	0.07	0.1
19,5		XXX	38	70	19	126	20	0.5	0.09	0.13
20		XXX	38	70	19.5	126	20	0.5	0.09	0.13

Solid carbide | DIN 6527 | Type W | 4 | a_e 0.5×D | h6 DIN 6535 HA

GARANT Master Alu solid carbide milling cutter / solid carbide milling cutter

Extra sharp cutting edges.
Dimensions similar to DIN 6527.
Double relief ground side clearance angle.

20 2470 – For roughing and finishing. Up to 2×D into solid material at very high feed rates and smooth cutting action.

h6 | 38° | 90°

new **Ground recess**

20 2470

e8 | 45° | 90°

Ground recess

20 2480

Suitable for/ v_c [m/min]	Alu	Alu	Alu cast > 10 % Si	PMMA acrylic	PE-HD	PA 66	PEEK	PF 31	AFRP aramid	PVDF GF20	POM GF25	PA 66 GF30	PEEK GF30	PTFE CF25	PEEK CF30	Honeycomb sandwich	Cu	CuZn					
ISO code	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N					
20 2470	250	200	180	180	130	150	130	110								180	120	150		●	○	○	○
20 2480	180	140	105	180	130	150	130	110								180	140	180		●	○	○	○

Ø D_c	11X 20 2470	11X 20 2480	L_s	L_4	Ø D_4	L_{tot}		Alu f_z		Alu f_z	
	GARANT Master Alu solid carbide milling cutter	Solid carbide milling cutter									
	DIN 6535 HA										
								20 2470	20 2480	20 2470	20 2480
mm	uncoated	uncoated	mm	mm	mm	mm	mm	mm	mm	mm	mm
3	XXX	XXX	10	15	2.8	57	6	0.04	0.008	0.05	0.01
4	XXX	XXX	13	18	3.8	57	6	0.05	0.015	0.06	0.02
5	XXX	XXX	15	20	4.8	57	6	0.06	0.015	0.08	0.02
6	XXX	XXX	16	21	5.8	57	6	0.06	0.025	0.08	0.03
8	XXX	XXX	22	27	7.8	63	8	0.08	0.03	0.1	0.04
10	XXX	XXX	25	30	9.8	72	10	0.09	0.04	0.12	0.05
12	XXX	XXX	28	33	11.8	83	12	0.1	0.05	0.15	0.07
14	XXX	XXX	30	35	13.8	83	14	0.12	0.05	0.17	0.07
16	XXX	XXX	36	41	15.8	92	16	0.14	0.065	0.18	0.09
20	XXX	XXX	41	51	19.8	104	20	0.18	0.085	0.22	0.12

Solid carbide | DIN 6527 | Type W | 4 | a_e 0.25×D | h6 DIN 6535 HA

GARANT Master Alu solid carbide milling cutter / solid carbide milling cutter

Extra sharp cutting edges.
Dimensions similar to DIN 6527.

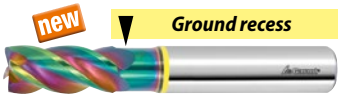
20 2512 – For roughing and finishing.Up to 2×D into solid material at very high feed rates and smooth cutting action.

20 2512/2515 – With the latest generation of **DLC coating sp²**.

20 2545 – Eccentric relief ground.

h6 | 38° | 90°

new **Ground recess**



20 2512

e8 | 45° | 90°

20 2515

e8 | 45° | 90°

20 2545

Suitable for/ v_c [m/min]	Alu	Alu	Alu cast > 10 % Si	PMMA acrylic	PE-HD	PA 66	PEEK	PF 31	AFRP aramid	PVDF GF20	POM GF25	PA 66 GF30	PEEK GF30	PTFE CF25	PEEK CF30	Honeycomb sandwich	Cu	CuZn					
ISO code	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N					
20 2512	550	500	450	200	160	200	150	130		180	160	150	130	160		300	160	200		●	○	○	●
20 2515	480	440	400	200	160	200	150	130		180	160	150	130	160		300	160	200		●	●	○	●
20 2545	300	280	200	180	130	150	130	110								180	120	150		●	○	○	○

Ø D_c	11X 20 2512	11X 20 2515	12X 20 2545	L_s	L_4	Ø D_4	L_{tot}		Alu f_z		Alu f_z	
	GARANT Master Alu solid carbide milling cutter	Solid carbide milling cutter			20 2512	20 2512						
	DLC	DLC	TiAlN						20 2512	20 2515 20 2545	20 2512	20 2515 20 2545
mm				mm	mm	mm	mm	mm	mm	mm	mm	mm
2	XXX	XXX	–	6	13	1.8	57	6	0.03	0.008	0.04	0.01
3	XXX	XXX	XXX	10	15	2.8	57	6	0.04	0.008	0.05	0.01
4	XXX	XXX	XXX	13	18	3.7	57	6	0.05	0.015	0.06	0.025
5	XXX	XXX	XXX	15	20	4.7	57	6	0.06	0.015	0.08	0.025
6	XXX	XXX	XXX	16	21	5.5	57	6	0.06	0.025	0.08	0.04
6M	XXX	XXX	–	20	24	5.5	65	6	0.06	0.025	0.08	0.04
8	XXX	XXX	XXX	22	27	7.4	63	8	0.08	0.03	0.1	0.05
8M	XXX	XXX	–	26	30	7.4	70	8	0.08	0.03	0.1	0.05
10	XXX	XXX	XXX	25	30	9.2	72	10	0.09	0.04	0.12	0.065
10M	XXX	XXX	–	30	38	9.2	80	10	0.09	0.04	0.12	0.065
12	XXX	XXX	XXX	28	33	11	83	12	0.1	0.05	0.15	0.09
12M	XXX	XXX	–	36	46	11	93	12	0.1	0.05	0.15	0.09
16	XXX	XXX	XXX	36	41	15	92	16	0.14	0.065	0.18	0.12
16M	XXX	XXX	–	48	58	15	110	16	0.14	0.065	0.18	0.12
20	XXX	XXX	XXX	41	51	19	104	20	0.18	0.085	0.22	0.15
20M	XXX	XXX	–	60	74	19	126	20	0.18	0.085	0.22	0.15

Solid carbide | Standard | Type W | f8 | 4 | 45° | HPC | a_e 0.3×D | G 2.5 n_{max} | G 2.5 n_{max}

Garant Solid carbide roughing end mills HPC

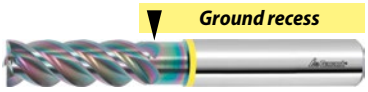
Sturdy roughing end mill **without** knuckle profile.
With strong core, **special chip breaker recesses** and **large polished flutes.**

Application: For roughing milling with high demands on the component surface.

h6 DIN 6535 HA | h6 DIN 6535 HB | 45°

20 2549

h6 DIN 6535 HA | 45°



20 2552

Suitable for/ v_c [m/min]	Alu	Alu	Alu cast > 10 % Si	PMMA acrylic	PE-HD	PA 66	PEEK	PF 31	AFRP aramid	PVDF GF20	POM GF25	PA 66 GF30	PEEK GF30	PTFE CF25	Hybrid	Honey-comb sandwich	Cu	CuZn					
ISO code	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N					
20 2549	500	**480**	**240**															**240**		●	●	○	○
20 2552	**480**	**440**	**400**	**200**	**160**	**200**	**150**	**130**		**180**	**160**	**150**	**130**	**160**		300	**160**	**200**		●	●	○	●

Ø f8 D_c	11X 20 2549	11X 20 2552	L_s	L_4	Ø D_4	L_{tot}		Shank form		45°	Alu f_z	Alu f_z
	Solid carbide end mill							20 2549	20 2552			
	HPC											
mm	ZOX	DLC	mm	mm	mm	mm	mm			mm	mm	mm
4	XXX	XXX	16	22	3.7	62	6	HA	HA	0.1	0.05	0.06
5	XXX	XXX	17	24	4.7	62	6	HA	HA	0.1	0.06	0.08
6	XXX	XXX	18	24	5.5	62	6	HA	HA	0.2	0.07	0.09
8	XXX	XXX	24	30	7.4	68	8	HA	HA	0.2	0.08	0.1
10	XXX	XXX	30	38	9.2	80	10	HA	HA	0.2	0.09	0.11
12	XXX	XXX	36	46	11	93	12	HA	HA	0.2	0.1	0.12
16	XXX	XXX	48	58	15	108	16	HB	HA	0.2	0.12	0.14
20	XXX	XXX	60	74	19	126	20	HB	HA	0.2	0.16	0.18

Solid carbide | Standard | Type W | f8 | 4 | 45° | HPC | h6 DIN 6535 HA | h6 DIN 6535 HB | G 2.5 n_{max} | G 2.5 n_{max}

Garant Solid carbide roughing end mills HPC

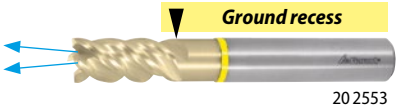
Sturdy roughing end mills **without** knuckle profile.
With strong core, **special chip breaker recesses** and **large polished flutes.**

Application: For roughing milling with high demands on the component surface.

a_e 0.5×D | 45°

20 2548

a_e 0.5×D | 45°



20 2553

a_e 0.3×D | 45°

20 2551

Suitable for/ v_c [m/min]	Alu	Alu	Alu cast > 10 % Si	PMMA acrylic	PE-HD	PA 66	PEEK	PF 31	AFRP aramid	PVDF GF20	POM GF25	PA 66 GF30	PEEK GF30	PTFE CF25	PEEK CF30	Hybrid	Honey-comb sandwich	CuZn					
ISO code	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N					
20 2548/2553	500	**480**	**240**															**240**		●	●	○	○
20 2551	250	**240**	**120**															**120**		●	●	○	○

Ø f8 D_c	11X 20 2548	11X 20 2553	11X 20 2551	L_s	L_4		Ø D_4	L_{tot}			Shank form	45°	Alu f_z	Alu f_z
	Solid carbide end mill	Solid carbide end mill with internal coolant supply	Solid carbide end mill		20 2548 20 2553	20 2551		20 2548 20 2553	20 2551					
	HPC													
mm	ZOX	ZOX	ZOX	mm	mm	mm	mm	mm	mm	mm		mm	mm	mm
3	XXX	XXX	–	6	10	–	2.7	57	–	6	HA	0.1	0.035	0.045
4	XXX	XXX	–	8	14	–	3.7	57	–	6	HA	0.1	0.035	0.045
5	XXX	XXX	–	10	16	–	4.7	57	–	6	HA	0.1	0.06	0.08
6	XXX	XXX	XXX	12	19	42	5.5	57	80	6	HA	0.2	0.06	0.08
8	XXX	XXX	XXX	16	25	62	7.4	63	100	8	HA	0.2	0.06	0.08
10	XXX	XXX	XXX	20	30	58	9.2	72	100	10	HA	0.2	0.07	0.09
12	XXX	XXX	XXX	24	36	73	11	83	120	12	HA	0.2	0.07	0.09
16	XXX	XXX	XXX	32	42	100	15	92	150	16	HB	0.2	0.09	0.12
20	XXX	XXX	XXX	40	52	98	19	104	150	20	HB	0.2	0.12	0.16

Solid carbide | Standard | Type N | e8 | 4 | 30° | a_e 0.3×D | h6 DIN 6535 HA | h6 DIN 6535 HB

Solid carbide milling cutter

20 2555 – Double relief ground side clearance angle.
20 2615 – Eccentric relief ground.

20 2555

20 2615

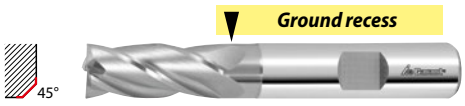
Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	Uni				
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	K					
20 2555		280	200	120	105	100	70	60	35					80	60		90	●		●	○	●	●
20 2615		280	200	120	105	100	70							80	60		90			●	○	○	○

Ø e8 D_C	11X 20 2555 Garant	12X 20 2615 HOLEX	L_s	L_{tot}		Shank form	45° 20 2555	< 900 N f_z	< 900 N f_z
	Solid carbide milling cutter								
mm	TiAlN	TiAlN	mm	mm	mm		mm	mm	mm
2	XXX	XXX	3	32	2	HA	0.03	0.01	0.011
3	XXX	XXX	5	32	3	HA	0.04	1	0.011
4	XXX	XXX	8	36	4	HA	0.05	0.02	0.023
5	XXX	XXX	9	45	5	HA	0.06	0.02	0.023
6	XXX	XXX	10	46	6	HB	0.07	0.03	0.033
8	XXX	XXX	12	55	8	HB	0.08	4	0.045
10	XXX	XXX	14	65	10	HB	0.1	5	0.06
12	XXX	XXX	16	66	12	HB	0.13	0.06	0.08
14	XXX	–	18	70	14	HB	0.15	0.06	0.08

Solid carbide | Standard | Type N | e8 | 4 | 30° | a_e 0.3×D | h6 DIN 6535 HA | h6 DIN 6535 HB

Solid carbide milling cutter

20 2640 – Double relief ground side clearance angle.
20 2680 – Eccentric relief ground.



20 2640

20 2680

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	Uni				
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	K					
20 2640		140	105	70	60	55	35	30	25					40	30		55	●		●	○	○	○
20 2680		140	105	70	60	55	35							40			55	○		●	○	○	○

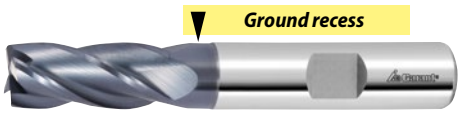
Ø e8 D_C	11X 20 2640 Garant	12X 20 2680 HOLEX	L_s	L_4 20 2640	Ø D_4 20 2640	L_{tot}		Shank form	45° 20 2640	< 900 N f_z	< 900 N f_z
	Solid carbide milling cutter										
mm	uncoated	uncoated	mm	mm	mm	mm	mm		mm	mm	mm
2	XXX	XXX	8	13	1.8	32	2	HA	0.03	0.01	0.011
3	XXX	XXX	12	17	2.8	38	3	HA	0.04	0.01	0.011
4	XXX	XXX	13	18	3.8	40	4	HA	0.05	0.02	0.023
5	XXX	XXX	15	20	4.8	50	5	HA	0.06	0.02	0.023
6	XXX	XXX	16	21	5.8	58	6	HB	0.07	0.03	0.033
7	XXX	–	20	25	6.8	60	7	HA	0.07	0.03	0.033
8	XXX	XXX	22	32	7.8	70	8	HB	0.08	0.04	0.045
9	XXX	–	20	30	8.8	60	9	HA	0.08	0.04	0.045
10	XXX	XXX	25	30	9.8	73	10	HB	0.1	0.05	0.06
12	XXX	XXX	28	38	11.8	84	12	HB	0.13	0.06	0.08
13	XXX	–	25	35	12.8	75	13	HA	0.14	0.06	0.08
14	XXX	–	30	35	13.8	84	14	HB	0.15	0.06	0.08
15	XXX	–	25	35	14.8	75	15	HA	0.15	0.06	0.08
16	XXX	XXX	35	45	15.8	93	16	HB	0.18	0.08	0.1
18	XXX	–	35	45	17.8	100	18	HB	0.18	0.08	0.1
20	XXX	–	40	50	19.8	104	20	HB	0.2	0.1	0.12
25	XXX	–	50	60	24.5	125	25	HB	0.25	0.1	0.12

Solid carbide | Standard | Type H | 4 | 30° | a_e 0.3×D | h6 DIN 6535 HA | h6 DIN 6535 HB

Solid carbide milling cutter

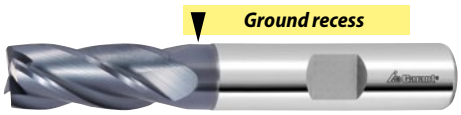
20 2760 – Eccentric relief ground.
20 2720/2725 – Double relief ground side clearance angle.
20 2725/2760 – **Without** 45° cutting edge chamfer.

e8 | 45° | Ground recess



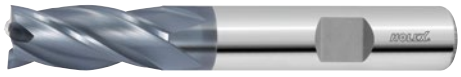
20 2720

e8 | 90° | Ground recess



20 2725

h10 | 90°



20 2760

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	K						
20 2720/2725		280				**100**	**70**	**60**	**35**					**80**	60		**90**	●		●	○	●	●
20 2760		280				**100**	**70**	**60**	35					**80**	60		**90**	○		●	○	○	○

Ø D_c	11X 20 2720 Garant	11X 20 2725 Garant	L_3	L_4	Ø D_4	L_{tot}		Shank form	45° 20 2720	< 900 N f_z	< 900 N f_z
	Solid carbide milling cutter										
mm	TiAlN	TiAlN	mm	mm	mm	mm	mm		mm	mm	mm
2	XXX	XXX	8	13	1.8	32	2	HA	0.03	0.01	0.011
3	XXX	XXX	12	17	2.8	38	3	HA	0.04	0.01	0.011
4	XXX	XXX	12	18	3.8	40	4	HA	0.04	0.02	0.023
5	XXX	XXX	15	20	4.8	50	5	HA	0.06	0.02	0.023
6	XXX	XXX	16	21	5.8	58	6	HB	0.07	0.03	0.033
7	XXX	XXX	20	25	6.8	60	7	HA	0.07	0.03	0.033
8	XXX	XXX	22	32	7.8	70	8	HB	0.08	0.04	0.045
9	XXX	XXX	20	30	8.8	60	9	HA	0.08	0.04	0.045
10	XXX	XXX	25	30	9.8	73	10	HB	0.1	0.05	0.06
12	XXX	XXX	28	38	11.8	84	12	HB	0.13	0.06	0.08
13	XXX	XXX	25	35	12.8	75	13	HA	0.14	0.06	0.08
14	XXX	XXX	30	35	13.8	84	14	HB	0.15	0.06	0.08
15	XXX	XXX	25	35	14.8	75	15	HA	0.15	0.06	0.08
16	XXX	XXX	35	45	15.8	93	16	HB	0.18	0.08	0.1
18	XXX	XXX	36	45	17.8	100	18	HB	0.18	0.08	0.1
20	XXX	XXX	41	50	19.8	104	20	HB	0.2	0.1	0.12
25	XXX	XXX	50	60	24.5	125	25	HB	0.25	0.1	0.12

Ø D_c	12X 20 2760 HOLEX	L_3	L_{tot}		Shank form	< 900 N f_z	< 900 N f_z
	Solid carbide milling cutter						
mm	TiAlN	mm	mm	mm		mm	mm
2	XXX	8	32	2	HA	0.01	0.011
3	XXX	12	38	3	HA	0.01	0.011
4	XXX	12	40	4	HA	0.02	0.023
5	XXX	15	50	5	HA	0.02	0.023
6	XXX	16	58	6	HB	0.03	0.033
8	XXX	22	70	8	HB	0.04	0.045
10	XXX	25	73	10	HB	0.05	0.06
12	XXX	28	84	12	HB	0.06	0.08
16	XXX	35	93	16	HB	0.08	0.1
20	XXX	41	104	20	HB	0.1	0.12

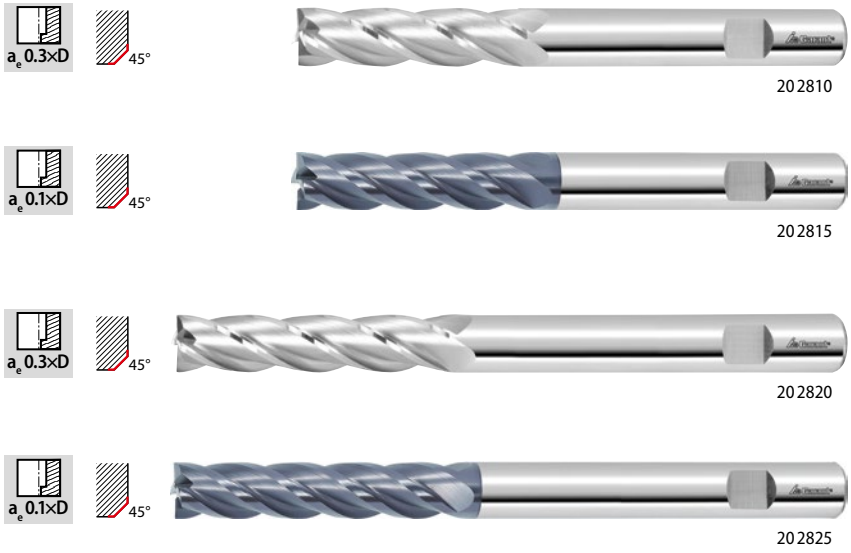
Solid carbide | Standard | Type N | e8 | 4 | 35° | h6 DIN 6535 HA | h6 DIN 6535 HB

Garant

Solid carbide milling cutter

Double relief ground side clearance angle.

20 2815/2825 – With **high-performance coating** for general-purpose use.



Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	K						
20 2810		140	105	**70**	**60**	**55**	**35**	**30**	25					**40**			**55**	●		●	○		
20 2815		280	200	**120**	**105**	**100**	**70**	**60**	**35**					**80**	60		**90**	●		●	○	○	○
20 2820		110	80	**50**	**45**	**40**	**35**	**25**						**35**			55	○		●	○		
20 2825		210	140	**80**	**75**	**70**	**50**	**40**	**25**					**60**	40		**70**	○		●	○	○	○

Ø e8 D_C	11X 20 2810	11X 20 2815	L_s	L_{tot}		Shank form	45°	< 900 N f_z
	Solid carbide milling cutter							
mm	uncoated	TiAlN	mm	mm	mm		mm	mm
4	XXX	XXX	16	75	4	HA	0.04	0.023
5	XXX	XXX	20	75	5	HA	0.05	0.023
6	XXX	XXX	24	80	6	HB	0.06	0.033
8	XXX	XXX	32	100	8	HB	0.07	0.045
10	XXX	XXX	40	100	10	HB	0.08	0.06
12	XXX	XXX	48	120	12	HB	0.1	0.08
14	XXX	XXX	45	100	14	HB	0.13	0.08
16	XXX	XXX	50	125	16	HB	0.15	0.1
18	XXX	XXX	55	130	18	HB	0.18	0.1
20	XXX	XXX	60	135	20	HB	0.2	0.12

Ø e8 D_C	11X 20 2820	11X 20 2825	L_s	L_{tot}		Shank form	45°	< 900 N f_z
	Solid carbide milling cutter							
mm	uncoated	TiAlN	mm	mm	mm		mm	mm
3	XXX	XXX	16	75	3	HA	0.04	0.011
4	XXX	XXX	20	100	4	HA	0.05	0.023
5	XXX	XXX	25	100	5	HA	0.06	0.023
6	XXX	XXX	30	100	6	HB	0.07	0.033
8	XXX	XXX	40	120	8	HB	0.08	0.045
10	XXX	XXX	50	120	10	HB	0.1	0.06
12	XXX	XXX	60	150	12	HB	0.13	0.08
14	XXX	XXX	56	150	14	HB	0.15	0.08
16	XXX	XXX	65	150	16	HB	0.18	0.1
18	XXX	XXX	72	150	18	HB	0.18	0.1
20	XXX	XXX	80	150	20	HB	0.2	0.12

Solid carbide | Standard | Type H | f8 | 4 | 45° | MTC

Garant Solid carbide milling cutter MTC, MTC / TPC

Significant cutting force reduction due to 45° helix.

Application: Especially for **MTC (Multi Task Cutting)** use on the new generation of turning / milling centres.

Note: For materials > 55 HRC we recommend reducing the depth of cut to a_p =0.25×D...0.5×D.

a_e 0.3×D | h6 DIN 6535 HB | 45°

20 2976

TPC $a_{e\,max}$ 0.1×D | a_e 0.15×D | TPC | h6 DIN 6535 HB | 45°

Ground recess

20 2977

TPC $a_{e\,max}$ 0.1×D | a_e 0.15×D | TPC | h6 DIN 6535 HA | R

new | Ground recess

20 2979

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	Graphite GRP CRP	Uni
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	N	
20 2976–20 2979						160	115	115	60	30	25	20						

Ø f8 D_c	11× 20 2976	11× 20 2977	11× 20 2979	L_s	L_4	Ø D_4	L_{tot}		45°	R	< 60 HRC f_z	< 60 HRC f_z
	Solid carbide roughing end mill			20 2976	20 2977 20 2979	20 2977 20 2979	20 2977 20 2979	20 2976	20 2977 20 2979		20 2976 20 2977	20 2979		
	MTC	MTC / TPC	MTC / TPC											
mm	TiAlN	TiAlN	TiAlN	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
4	XXX	XXX	XXX	8	11	18	3.8	54	57	6	0.05	0.1	0.008	0.01
5	XXX	XXX	XXX	9	13	18	4.7	54	57	6	0.1	0.1	0.01	0.015
6	XXX	XXX	XXX	10	13	20	5.5	54	57	6	0.1	0.1	0.015	0.02
8	XXX	XXX	XXX	12	21	25	7.4	58	63	8	0.1	0.2	0.02	0.025
10	XXX	XXX	XXX	14	22	30	9.2	66	72	10	0.15	0.2	0.025	0.03
12	XXX	XXX	XXX	16	26	35	11	73	83	12	0.15	0.3	0.03	0.035
14	XXX	XXX	–	16	26	35	13	73	83	14	0.15	–	0.035	0.04
16	XXX	XXX	XXX	22	36	40	15	82	92	16	0.15	0.3	0.04	0.045
20	XXX	XXX	XXX	26	41	50	19	92	104	20	0.25	0.3	0.045	0.05

Solid carbide | Standard | Type H | f8 | 4 | 45° | MTC

Garant Solid carbide milling cutter MTC / TPC, MTC

Significant cutting force reduction due to 45° helix.

Application: Especially for **MTC (Multi Task Cutting)** use on the new generation of turning / milling centres.

Note: For materials > 55 HRC we recommend reducing the depth of cut to a_p=0.25×D...0.5×D.

TPC $a_{e\,max}$ 0.1×D | a_e 0.2×D | TPC | h6 DIN 6535 HB | 45°

Ground recess

20 2978

a_e 0.2×D | TPC | h6 DIN 6535 HA | R

new | Ground recess

20 2981

a_e 0.15×D | h6 DIN 6535 HB | 45°

Ground recess

20 2982

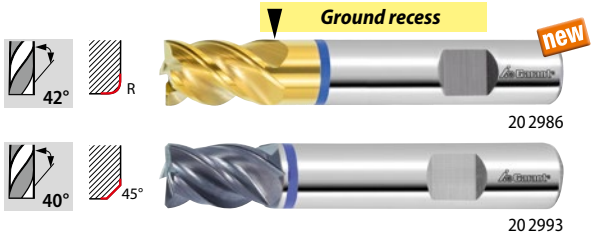
Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	Graphite GRP CRP	Uni
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	N	
20 2978/2981						160	115	115	60	30	25	20						
20 2982						90	70	60	45	25	20	15						

Ø f8 D_c	11× 20 2978	11× 20 2981	11× 20 2982	L_s	L_4	Ø D_4	L_{tot}		45°	R	< 60 HRC f_z	< 60 HRC f_z
	Solid carbide roughing end mill			20 2978 20 2981	20 2982	20 2978 20 2981	20 2982	20 2978 20 2981	20 2982		20 2978 20 2982	20 2981		
	MTC / TPC	MTC / TPC	MTC											
mm	TiAlN	TiAlN	TiAlN	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
4	XXX	XXX	–	16	–	23	–	3.8	62	–	6	0.05	0.1	0.008	0.01
5	XXX	XXX	–	17	–	24	–	4.7	62	–	6	0.1	0.1	0.01	0.015
6	XXX	XXX	XXX	18	12	25	42	5.5	62	80	6	0.1	0.1	0.015	0.02
8	XXX	XXX	XXX	24	16	30	62	7.4	68	100	8	0.1	0.2	0.02	0.025
10	XXX	XXX	XXX	30	20	35	60	9.2	80	100	10	0.15	0.2	0.025	0.03
12	XXX	XXX	XXX	36	24	45	73	11	93	120	12	0.15	0.3	0.03	0.035
14	XXX	–	–	42	–	50	–	13	99	–	14	0.15	–	0.05	0.04
16	XXX	XXX	XXX	48	32	55	100	15	108	150	16	0.15	0.3	0.04	0.045
20	XXX	XXX	XXX	60	40	70	98	19	126	150	20	0.25	0.3	0.05	0.05

Solid carbide | Standard | Type N | e8 | 4 | ≠ | ≠ | a_e 0.5×D | h6 DIN 6535 HB | HPC

GARANT Master INOX M solid carbide milling cutter / solid carbide HPC milling cutter

20 2986 – Specially for **machining stainless steels such as duplex steels at high rates of metal removal.**



Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	TOOLOX® 33 HRC	TOOLOX® 44 HRC	INOX < 900 N	INOX > 900 N	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	H	H	M	M						
20 2986				250	230	200	180	170						115	80	140	120	○		●	●	○	●
20 2993				250	230	200	180	170						115	80	90	80	○		●	●	○	●

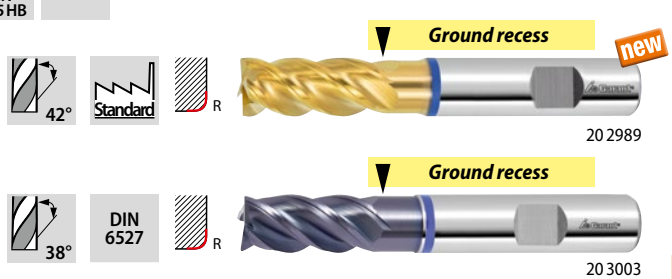
Ø e8 D_C	11X 20 2986	11X 20 2993	L_s	L_4	Ø D_4	L_{tot}		45°	R	INOX > 900 N f_z		INOX > 900 N f_z	
	GARANT Master INOX M solid carbide milling cutter	Solid carbide milling cutter											
	HPC			20 2986	20 2986			20 2993	20 2986	20 2986	20 2993	20 2986	20 2993
mm	TiAlN	AlCrN	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
3	XXX	–	5	–	–	50	6	–	0.1	0.02	–	0.03	–
4	XXX	XXX	8	–	–	54	6	0.4	0.1	0.03	0.012	0.04	0.015
5	XXX	XXX	9	–	–	54	6	0.4	0.1	0.04	0.025	0.05	0.025
6	XXX	XXX	10	16	5.8	54	6	0.4	0.1	0.04	0.025	0.05	0.03
8	XXX	XXX	12	20	7.7	58	8	0.5	0.15	0.06	0.025	0.07	0.04
10	XXX	XXX	14	24	9.7	66	10	0.5	0.2	0.07	0.04	0.08	0.045
12	XXX	XXX	16	26	11.6	73	12	0.5	0.2	0.07	0.04	0.09	0.05
16	XXX	XXX	22	32	15.5	82	16	0.5	0.2	0.08	0.05	0.1	0.055
20	XXX	XXX	26	40	19.5	92	20	0.5	0.2	0.1	0.07	0.12	0.08

Solid carbide | Type N | e8 | 4 | ≠ | ≠ | a_e 0.3×D | h6 DIN 6535 HB | HPC

GARANT Master INOX M solid carbide milling cutter / solid carbide HPC milling cutter

20 2989 – Specially for **machining stainless steels such as duplex steels at high rates of metal removal.**

20 3003 – With corner radii similar to torus cutters.



Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	TOOLOX® 33 HRC	TOOLOX® 44 HRC	INOX < 900 N	INOX > 900 N	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	H	H	M	M						
20 2989				250	230	200	180	170						115	80	140	120	○		●	●	○	●
20 3003				250	230	200	180	170						115	80	95	80	○		●	●	○	●

Ø e8 D_C	11X 20 2989	11X 20 3003	L_s		L_4		Ø D_4	L_{tot}			R			INOX > 900 N f_z		INOX > 900 N f_z	
	GARANT Master INOX M solid carbide milling cutter	Solid carbide milling cutter															
	HPC / TPC	HPC	20 2989	20 3003	20 2989	20 3003		20 2989	20 3003		20 2989	20 3003		20 2989	20 3003	20 2989	20 3003
mm	TiAlN	TiAlN	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
3	XXX	–	8	–	13	–	2.8	57	–	6	0.1	–	0.02	–	0.03	–	
4	XXX	XXX	11	9	17	14	3.8	57	57	6	0.1	0.1	0.03	0.012	0.04	0.02	
5	XXX	XXX	13	13	19	18	4.8	57	57	6	0.1	0.2	0.04	0.025	0.05	0.03	
6	XXX	XXX	13	13	19	18	5.8	57	57	6	0.1	0.2	0.04	0.025	0.05	0.04	
6M	XXX	–	18	–	24	–	5.8	62	–	6	0.1	–	0.04	–	0.05	–	
8	XXX	XXX	21	19	25	24	7.7	63	63	8	0.15	0.25	0.06	0.025	0.07	0.05	
8M	XXX	–	24	–	30	–	7.7	68	–	8	0.15	–	0.06	–	0.07	–	
10	XXX	XXX	22	22	30	32	9.7	72	72	10	0.2	0.25	0.07	0.04	0.08	0.06	
10M	XXX	–	30	–	38	–	9.7	80	–	10	0.2	–	0.07	–	0.08	–	
12	XXX	XXX	26	26	36	36	11.6	83	83	12	0.2	0.3	0.07	0.04	0.08	0.065	
12M	XXX	–	36	–	46	–	11.6	93	–	12	0.2	–	0.07	–	0.08	–	
14	XXX	–	26	–	36	–	13.6	83	–	12	0.2	–	0.08	–	0.09	–	
16	XXX	XXX	36	32	42	42	15.5	92	92	16	0.2	0.4	0.08	0.05	0.09	0.07	
16M	XXX	–	48	–	58	–	15.5	108	–	16	0.2	–	0.08	–	0.09	–	
18	XXX	–	36	–	42	–	17.5	92	–	16	0.2	–	0.1	–	0.12	–	
20	XXX	XXX	41	38	52	48	19.5	104	104	20	0.2	0.4	0.1	0.07	0.12	0.1	
20M	XXX	–	60	–	74	–	19.5	126	–	20	0.2	–	0.1	–	0.12	–	
25	XXX	XXX	45	45	60	60	24.5	125	121	25	0.2	0.5	0.12	0.07	0.14	0.1	

Solid carbide | Type N | h10 | 4 | 40° | ≠ | ≠ | h6 DIN 6535 HB | HPC

Garant®

Master INOX solid carbide HPC, HPC/TPC milling cutters

For **roughing and finishing**.
HPC milling cutter with **newly developed high-performance coating** for **outstanding tool life** and **optimum metal removal rate** in a very wide range of stainless steels. **Greater oxidation resistance** and **high-temperature hardness**.
Can be used at **high cutting speeds**, particularly suitable even for TOOLOX®.

20 2999 – With **internal coolant supply** for reliable chip evacuation.

Advantage: Particularly low vibration running.

DIN 6527 | a_e 0.3×D | 45°

20 2998

new **Ground recess**

DIN 6527 | TPC a_{emax} 0.1×D | TPC | 45°

20 2997

Ground recess

DIN 6527 | TPC a_{emax} 0.1×D | TPC | 45°

20 3007

new **Ground recess**

DIN 6527 | TPC a_{emax} 0.1×D | TPC | 45°

20 2999

Ground recess

Standard | a_e 0.3×D | 45°

20 3006

Ground recess

Standard | TPC a_{emax} 0.08×D | TPC | 45°

20 3011

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 50 HRC	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	Graphite GRP CRP					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	H	M	M	S	N					
20 2997/2998/3007				250	230	200	180	115	80						110	90			●	●	○	●	
20 2999				250	230	200	180	115	80						110	90			●			●	
20 3006/3011				240	220	180	180	115	80						100	85			●	●	○	●	

Ø h10 D_c	11x 20 2998	11x 20 2997	11x 20 3007	11x 20 2999	L_s	L_4	Ø D_4	L_{tot}		45°	INOX > 900 N f_z	INOX > 900 N f_z
	Master INOX solid carbide milling cutter				20 2998	20 2997 20 3007 20 2999	20 2997 20 3007 20 2999	20 2997 20 3007 20 2999	20 2998	20 2997 20 3007 20 2999	20 2998 20 3007 20 2999	20 2997		
	HPC	HPC / TPC	HPC / TPC	HPC / TPC										
mm	TiAlN	TiAlN	TiAlN	TiAlN	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
3	XXX	XXX	XXX	–	5	8	20	2.8	50	57	6	0.15	0.1	0.012	0.015
4	XXX	XXX	XXX	XXX	8	11	21	38	54	57	6	0.15	15	0.012	0.015
5	XXX	XXX	XXX	XXX	9	13	22	4.7	54	57	6	0.25	0.1	0.025	0.025
6	XXX	XXX	XXX	XXX	10	13	23	5.6	54	57	6	0.25	0.1	25	0.03
8	XXX	XXX	XXX	XXX	12	19	29	7.5	57	63	8	0.25	0.1	0.025	0.04
10	XXX	XXX	XXX	XXX	14	22	34	9.5	66	72	10	25	25	0.04	45
12	XXX	XXX	XXX	XXX	16	26	40	116	73	83	12	0.25	25	0.04	0.05
14	–	–	XXX	–	–	26	40	13.5	–	83	14	0.25	–	0.05	0.055
16	XXX	XXX	XXX	XXX	22	32	46	15.5	82	92	16	0.35	0.1	5	0.055
18	–	–	XXX	–	–	32	46	17.5	–	92	18	0.35	–	0.07	0.08
20	XXX	XXX	XXX	XXX	26	38	56	19.5	92	104	20	0.35	0.1	0.07	0.08
25	–	–	XXX	–	–	45	66	24.5	–	121	25	0.35	–	0.07	0.08

Ø h10 D_c	11x 20 3006	11x 20 3011	L_s	L_4	Ø D_4	L_{tot}		45°	INOX > 900 N f_z	INOX > 900 N f_z
	Master INOX solid carbide milling cutter		20 3006	20 3011						
	HPC	HPC / TPC								
mm	TiAlN	TiAlN	mm	mm	mm	mm	mm	mm	mm	mm
5	XXX	XXX	13	18	25	4.8	62	6	0.25	0.025	0.025
6	XXX	XXX	13	18	25	5.5	62	6	0.25	0.025	0.03
8	XXX	XXX	19	24	32	7.5	68	8	0.25	0.025	0.04
10	XXX	XXX	22	30	40	9.5	80	10	0.25	0.04	0.045
12	XXX	XXX	26	36	48	11.5	93	12	0.25	0.04	0.05
16	XXX	XXX	32	48	56	15.5	108	16	0.35	0.05	0.055
20	XXX	XXX	38	60	70	19.5	126	20	0.35	0.07	0.08

Solid carbide | Type N | f8 | 4 | 35° | ≠ | h6 DIN 6535 HB | HPC

HOLEX Solid carbide milling cutter HPC

Special TiSi coating.

20 3017 – With **internal coolant supply** for reliable chip evacuation.

Note: **NEW GENERATION AVAILABLE! Recommended successor products are No. 203013, 203015, 203021, 203027.**

a_e 0.5×D | DIN 6527 | 45° | new

20 2995

a_e 0.3×D | Standard | 45°

20 3014

a_e 0.3×D | DIN 6527 | 45° | Ground recess

20 3017

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	TOOLOX® 33 HRC	TOOLOX® 44 HRC	INOX < 900 N	INOX > 900 N	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	H	H	M	M						
20 2995/3014				240	220	180	180	150						115	80	90	80	○		●	○	●	●
20 3017				240	220	180	180	150						115	80	90	80	○		●			●

∅ f8 D_c	12X 20 2995	12X 20 3014	12X 20 3017	L_s	L_4	∅ D_4	L_{tot}		45°	INOX > 900 N f_z	INOX > 900 N f_z
	Solid carbide milling cutter		Solid carbide milling cutter with internal coolant supply	20 2995	20 3014 20 3017	20 3014 20 3017	20 3014 20 3017	20 2995	20 3014 20 3017				
	HPC												
mm	TiSi	TiSi	TiSi	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
3	XXX	XXX	–	5	8	13	2.8	50	57	6	0.1	0.012	0.015
4	XXX	XXX	–	8	11	17	3.8	54	57	6	0.1	0.012	0.015
5	XXX	XXX	–	9	13	19	4.8	54	57	6	0.1	0.025	0.025
6	XXX	XXX	XXX	10	13	19	5.8	54	57	6	0.1	0.025	0.03
6M	–	XXX	–	–	18	24	5.8	–	62	6	0.1	0.025	0.03
8	XXX	XXX	XXX	12	21	25	7.7	58	63	8	0.2	0.025	0.04
8M	–	XXX	–	–	24	30	7.7	–	68	8	0.2	0.025	0.04
10	XXX	XXX	XXX	14	22	30	9.7	66	72	10	0.2	0.04	0.045
10M	–	XXX	–	–	30	38	9.7	–	80	10	0.2	0.04	0.045
12	XXX	XXX	XXX	16	26	36	11.6	73	83	12	0.3	0.04	0.05
12M	–	XXX	–	–	36	46	11.6	–	93	12	0.3	0.04	0.05
14	–	XXX	–	–	26	36	13.6	–	83	14	0.3	0.04	0.05
16	XXX	XXX	XXX	22	36	42	15.5	82	92	16	0.3	0.05	0.055
16M	–	XXX	–	–	48	58	15.5	–	108	16	0.3	0.05	0.055
18	–	XXX	–	–	36	42	17.5	–	92	18	0.3	0.07	0.08
20	XXX	XXX	XXX	26	41	52	19.5	92	104	20	0.3	0.07	0.08
20M	–	XXX	–	–	60	74	19.5	–	126	20	0.3	0.07	0.08

Solid carbide | DIN 6527 | Type N | e8 | 4 | 38° | ≠ | a_e 0.3×D | h6 DIN 6535 HB | G 2.5 n_{max} | HPC

Garant Solid carbide milling cutter HPC with internal coolant supply

With **internal coolant supply** for reliable swarf evacuation.

45° | Ground recess

20 3016

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	TOOLOX® 33 HRC	TOOLOX® 44 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	H	M	M	S						
20 3016				250	230	200	180	170					115	80	100	85	60	○		●			●

∅ d11 D_c	11X 20 3016	L_s	L_4	∅ D_4	L_{tot}		45°	INOX > 900 N f_z	INOX > 900 N f_z
	Solid carbide milling cutter with internal coolant supply								
	HPC								
mm	TiAlN	mm	mm	mm	mm	mm	mm	mm	mm
4	XXX	11	17	3.8	57	6	0.1	0.012	0.015
5	XXX	13	19	4.8	57	6	0.1	0.025	0.025
6	XXX	13	19	5.8	57	6	0.1	0.025	0.03
8	XXX	21	25	7.7	63	8	0.2	0.025	0.04
10	XXX	22	30	9.7	72	10	0.2	0.04	0.045
12	XXX	26	36	11.6	83	12	0.3	0.04	0.05
16	XXX	36	42	15.5	92	16	0.3	0.05	0.055
20	XXX	41	52	19.5	104	20	0.3	0.07	0.08

Solid carbide | Standard | Type N | f8 | 4 | 35° | ≠ | h6 DIN 6535 HB | HPC

HOLEX Pro INOX solid carbide HPC milling cutters

HPC milling cutters with **newly developed high-performance coating** for **outstanding tool working life** and **optimum metal removal rates** in a wide range of stainless steels. For use at **high cutting speeds**, particularly suitable even for steels up to approx. 1100 N/mm².

20 3027 – With **internal coolant supply** for reliable swarf evacuation.

20 3013

20 3015

20 3027

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	TOOLOX® 33 HRC	TOOLOX® 44 HRC	INOX < 900 N	INOX > 900 N	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	H	H	M	M						
20 3013/3015				240	220	180	180	150						115	80	100	85	○		●	●	○	●
20 3027				240	220	180	180	150						115	80	100	85	○		●			●

Ø f8 D_C	12X 20 3013	12X 20 3015	12X 20 3027	L_s		L_4	Ø D_4	L_{tot}			45°	INOX > 900 N f_z	INOX > 900 N f_z
	Pro INOX solid carbide milling cutter		Pro INOX solid carbide milling cutter with through-coolant	20 3013	20 3015 20 3027	20 3015 20 3027	20 3015 20 3027	20 3013	20 3015 20 3027				
	HPC												
mm	AlCrN	AlCrN	AlCrN	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
3	XXX	XXX	–	5	8	13	2.8	50	57	6	0.1	0.012	0.015
4	XXX	XXX	XXX	8	11	17	3.8	54	57	6	0.1	0.012	0.015
5	XXX	XXX	XXX	9	13	19	4.8	54	57	6	0.1	0.025	0.025
6	XXX	XXX	XXX	10	13	19	5.8	54	57	6	0.1	0.025	0.03
8	XXX	XXX	XXX	12	21	25	7.7	58	63	8	0.2	0.025	0.04
10	XXX	XXX	XXX	14	22	30	9.7	66	72	10	0.2	0.04	0.045
12	XXX	XXX	XXX	16	26	36	11.6	73	83	12	0.3	0.04	0.05
14	–	XXX	–	–	26	36	13.6	–	83	14	0.3	0.05	0.055
16	XXX	XXX	XXX	22	36	42	15.5	82	92	16	0.3	0.05	0.055
18	–	XXX	–	–	36	42	17.5	–	92	18	0.3	0.07	0.08
20	XXX	XXX	XXX	26	41	52	19.5	92	104	20	0.3	0.07	0.08

Solid carbide | Standard | Type N | f8 | 4 | 35° | ≠ | a_e 0.3×D | h6 DIN 6535 HB | HPC

HOLEX Pro INOX solid carbide HPC milling cutters

HPC milling cutters with **newly developed high-performance coating** for **outstanding tool working life** and **optimum metal removal rates** in a wide range of stainless steels. For use at **high cutting speeds**, particularly suitable even for steels up to approx. 1100 N/mm².

20 3021

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	TOOLOX® 33 HRC	TOOLOX® 44 HRC	INOX < 900 N	INOX > 900 N	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	H	H	M	M						
20 3021				240	220	180	180	150						115	80	100	85	○		●	●	○	○

Ø f8 D_C	12X 20 3021	L_s	L_4	Ø D_4	L_{tot}		45°	INOX > 900 N f_z	INOX > 900 N f_z
	Pro INOX solid carbide milling cutter								
	HPC								
mm	AlCrN	mm	mm	mm	mm	mm	mm	mm	mm
6	XXX	18	24	5.8	62	6	0.1	0.025	0.03
8	XXX	24	30	7.7	68	8	0.2	0.025	0.04
10	XXX	30	38	9.7	80	10	0.2	0.04	0.045
12	XXX	36	46	11.6	93	12	0.3	0.04	0.05
16	XXX	48	58	15.5	108	16	0.3	0.05	0.055
20	XXX	60	74	19.5	126	20	0.3	0.07	0.08

Solid carbide | Standard | Type N | e8 | 4 | 38° | ≠ | h6 DIN 6535 HB | HPC

Garant® Solid carbide milling cutter HTC / TPC

20 3023 – Shank **similar to DIN 6535 HB.**

Note:

20 3023 – **Successor product to No. 203018.**

20 3024 – **Successor product to No. 203022.**

20 3026 – **Successor product to No. 203025.**

TPC $a_{e\,max}$ 0.04×D | TPC | 45°

20 3023

a_e 0.1×D | 45°

20 3024

Ground recess

a_e 0.1×D | 45°

20 3026

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	TOOLOX® 33 HRC	TOOLOX® 44 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	Uni
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	H	M	M	S	
20 3023				210	195	170	150	145					95	70	85	75	50	○
20 3024				100	90	80	70	65					55	50	45	40	30	○
20 3026				120	110	100	90	80					70	60	55	45	35	○

∅ e8 D_c	11X 20 3023	11X 20 3024	11X 20 3026	L_s	L_4	∅ D_4	L_{tot}		45°	INOX > 900 N f_z
	Solid carbide milling cutter									
	HPC / TPC	HPC	HPC	20 3023	20 3024	20 3026	20 3026	20 3026	20 3023	20 3024 20 3026			
mm	TiAlN	TiAlN	TiAlN	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
6	XXX	–	XXX	32	–	12	42	5.5	80	100	6	0.4	0.04
8	XXX	–	XXX	32	–	16	62	7.4	90	100	8	0.4	0.04
10	XXX	XXX	XXX	38	50	20	60	9.2	100	100	10	0.5	0.065
12	XXX	XXX	XXX	51	76	24	73	11	100	125	12	0.5	0.065
16	XXX	XXX	XXX	57	76	32	100	15	125	150	16	0.5	0.08
20	XXX	XXX	XXX	57	102	40	98	19	125	175	20	0.5	0.1

Solid carbide | DIN 6527 | Type N | 4 | ≠ | HPC

Garant® Solid carbide milling cutter HPC / TPC, Master Titan

Specially ground with corner radii similar to torus cutters and **special coating.**

20 3029 – For roughing and finishing at very high feed rates and smooth cutting action for the best tool life and high metal removal rate.

Note:

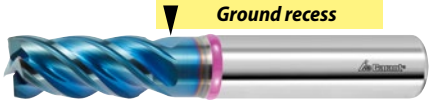
20 3029 – Regrinding not recommended.

h6 DIN 6535 HB | TPC $a_{e\,max}$ 0.08×D | ≠ | 35° | f8 | TPC | R

20 3028

h6 DIN 6535 HA | a_e 0.3×D | 40° | e8 | R

Ground recess



20 3029

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	Inconel®	Graphite GRP CRP
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	S	N
20 3028																	35	
20 3029																60		

∅ D_c	11X 20 3028	11Z 20 3029	L_s	L_4	∅ D_4	L_{tot}		R	Inconel® f_z	Ti > 850 N f_z	Ti > 850 N f_z
	Solid carbide milling cutter	Master Titan solid carbide milling cutter									
	HPC / TPC	HPC	20 3028	20 3029	20 3029	20 3029	20 3029	20 3029	20 3028	20 3029	20 3029
mm	TiAlN	TiAlN	mm	mm	mm	mm	mm	mm	mm	mm	mm
3	–	XXX	–	8	13	2.8	57	6	0.1	–	0.012	0.015
4	XXX	XXX	11	11	16	3.8	57	6	0.1	0.035	0.015	0.018
5	XXX	XXX	13	13	18	4.8	57	6	0.1	0.04	0.018	0.022
6	XXX	XXX	13	13	20	5.8	57	6	0.1	0.05	0.022	0.026
8	XXX	XXX	21	19	25	7.7	63	8	0.2	0.065	0.028	0.034
10	XXX	XXX	22	22	32	9.7	72	10	0.2	0.065	0.034	0.042
12	XXX	XXX	26	26	38	11.6	83	12	0.2	0.065	0.04	0.05
16	XXX	XXX	36	32	44	15.5	92	16	0.3	0.08	0.05	0.065
20	XXX	XXX	41	41	54	19.5	104	20	0.3	0.09	0.06	0.08

Solid carbide | DIN 6527 | Type N | f8 | 4 | 38° | h6 DIN 6535 HB | HPC

Master Steel solid carbide roughing end mill HPC

For **roughing and finishing.**

20 3034 – Up to 1×D into solid material **at very high feed rates** with smooth cutting action.
At maximum boring depths, ensure compliance with the ratio dimension L_s (cutting length) / ∅ (nominal size)!

20 3035/3039 – Up to 1.5×D into solid material **at very high feed rates** with smooth cutting action.

Advantage: Optimised flute form, eccentric relief ground, wide chip space.

20 3034

20 3039

20 3035

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	Uni				
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	K					
20 3034–20 3039				260	240	190	180	150						80	70		250	●		●	○	●	●

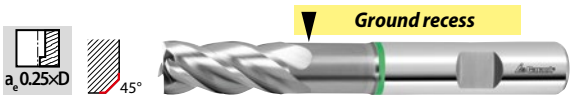
∅ f8 D_c	11X 20 3034	11X 20 3039	11X 20 3035	L_s	L_4	∅ D_4	L_{tot}		45°	< 900 N f_z	< 900 N f_z
	Master Steel solid carbide roughing end mill			20 3034	20 3039 20 3035	20 3039 20 3035	20 3039 20 3035	20 3034	20 3039 20 3035		20 3034 20 3035	20 3039		
	HPC													
mm	TiAlN	TiN	TiAlN	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
3	XXX	–	XXX	6	8	–	–	50	57	6	0.06	–	0.02	0.025
4	XXX	–	XXX	8	11	–	–	54	57	6	0.08	–	0.02	0.025
5	XXX	–	XXX	9	13	–	–	54	57	6	0.1	–	0.03	0.04
6	XXX	XXX	XXX	10	13	20	5.8	54	57	6	0.12	0.1	0.04	0.05
7	–	–	XXX	–	16	25	6.8	–	63	8	0.14	–	0.04	0.05
8	XXX	XXX	XXX	12	21	25	7.8	58	63	8	0.16	0.1	0.05	0.06
9	–	–	XXX	–	22	30	8.8	–	72	10	0.18	–	0.06	0.08
10	XXX	XXX	XXX	14	22	30	9.8	66	72	10	0.2	0.1	0.06	0.08
12	XXX	XXX	XXX	16	26	36	11.8	73	83	12	0.24	0.1	0.07	0.09
14	XXX	XXX	XXX	16	26	36	13.8	73	83	14	0.28	0.1	0.08	0.1
16	XXX	XXX	XXX	22	36	42	15.8	82	92	16	0.32	0.1	0.08	0.1
18	XXX	–	XXX	22	36	42	17.8	82	92	18	0.36	–	0.1	0.13
20	XXX	XXX	XXX	26	41	54	19.8	92	104	20	0.4	0.1	0.1	0.13
25	–	XXX	XXX	–	68	80	24.5	–	136	25	0.5	0.1	0.12	0.16

Solid carbide | Standard | Type N | f8 | 4 | 38° | h6 DIN 6535 HB | HPC

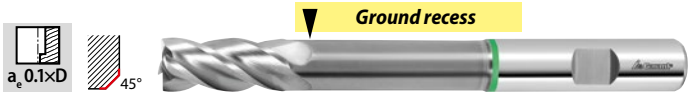
Master Steel solid carbide roughing end mill HPC

For **roughing and finishing** up to 0.7×D into solid material **at very high feed rates** with smooth cutting action.

Advantage: Optimised flute form, eccentric relief ground, wide chip space.



20 3036



20 3038

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	Uni				
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	K					
20 3036				260	240	190	180	150						80	70		250	●		●	○	●	●
20 3038				125	95	85	80	70						50	35		85	●		●	○	●	●

∅ f8 D_c	11X 20 3036	11X 20 3038	L_s	L_4		∅ D_4	L_{tot}			45°	< 900 N f_z	< 900 N f_z
	Master Steel solid carbide roughing end mill			20 3036	20 3038		20 3036	20 3038				
	HPC											
mm	TiAlN	TiAlN	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
6	XXX	XXX	13	25	42	5.8	62	80	6	0.12	0.04	0.05
8	XXX	XXX	21	30	62	7.7	68	100	8	0.16	0.05	0.06
10	XXX	XXX	22	38	58	9.7	80	100	10	0.2	0.06	0.08
12	XXX	XXX	26	46	73	11.6	93	120	12	0.24	0.07	0.09
14	XXX	–	26	52	–	13.6	99	–	14	0.28	0.08	0.1
16	XXX	XXX	36	58	100	15.5	108	150	16	0.32	0.08	0.1
18	XXX	–	36	67	–	17.5	117	–	18	0.36	0.1	0.13
20	XXX	XXX	41	74	98	19.5	126	150	20	0.4	0.1	0.13

Solid carbide | DIN 6527 | Type N | f8 | 4 | 38° | ≠ | ≠ | h6 DIN 6535 HB | HPC

Garant Solid carbide roughing end mill HPC

For **roughing and finishing.**

20 3031 – Up to 1.5×D into solid material **at very high feed rates** with smooth cutting action. At maximum boring depths, ensure compliance with the ratio dimension L_s (cutting length) / ∅ (nominal size)!

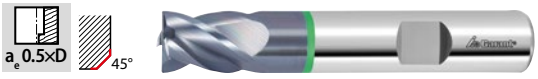
20 3041 – Up to 1×D into solid material **at very high feed rates** with smooth cutting action.

Advantage: Optimised flute form, eccentric relief ground, wide chip space.

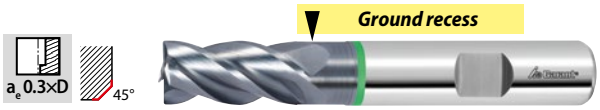
Note:

20 3031 – **NEW GENERATION AVAILABLE!**
Recommended successor product is No. 203034.

20 3041 – **NEW GENERATION AVAILABLE!**
Recommended successor product is No. 203035.



20 3031



20 3041

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	Uni				
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	K					
20 3031/3041				250	200	180	160							70	50		120	●		●	○	●	●

∅ f8 D_c	11X 20 3031	11X 20 3041	L_s		L_4		∅ D_4		L_{tot}			45°	< 900 N f_z	< 900 N f_z
	Solid carbide roughing end mill													
	HPC		20 3031	20 3041	20 3041	20 3041	20 3031	20 3041						
mm	TiAlN	TiAlN	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
3	XXX	XXX	6	8	–	–	50	57	6	0.06	0.02	0.025		
4	XXX	XXX	8	11	–	–	54	57	6	0.08	0.02	0.025		
5	XXX	XXX	9	13	–	–	54	57	6	0.1	0.03	0.04		
6	XXX	XXX	10	13	20	5.8	54	57	6	0.12	0.04	0.05		
8	XXX	XXX	12	21	25	7.8	58	63	8	0.16	0.05	0.06		
10	XXX	XXX	14	22	30	9.8	66	72	10	0.2	0.06	0.08		
12	XXX	XXX	16	26	36	11.8	73	83	12	0.24	0.07	0.09		
14	XXX	XXX	16	26	36	13.8	73	83	14	0.28	0.08	0.1		
16	XXX	XXX	22	36	42	15.8	82	92	16	0.32	0.08	0.1		
18	XXX	XXX	22	36	42	17.8	82	92	18	0.36	0.1	0.13		
20	XXX	XXX	26	41	54	19.8	92	104	20	0.4	0.1	0.13		
25	–	XXX	–	68	80	24.5	–	136	25	0.5	0.12	0.16		

Solid carbide | DIN 6527 | Type N | f8 | 4 | 38° | ≠ | ≠ | h6 DIN 6535 HB | HPC

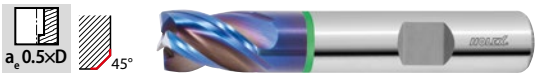
HOLEX Solid carbide roughing end mill HPC

For **roughing and finishing.**

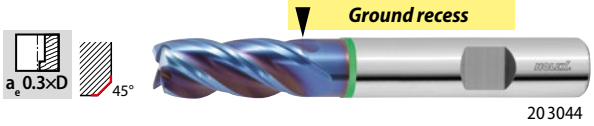
20 3037 – Up to 1.5×D into solid material **at very high feed rates** with smooth cutting action. At maximum boring depths, ensure compliance with the ratio dimension L_s (cutting length) / ∅ (nominal size)!

20 3044 – Up to 1×D into solid material **at very high feed rates** with smooth cutting action.

Advantage: Optimised flute form, eccentric relief ground, wide chip space.



20 3037



20 3044

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	Uni				
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	K					
20 3037/3044				250	200	180	160							70			120	●		●	○	●	●

∅ f8 D_c	12X 20 3037	12X 20 3044	L_s		L_4		∅ D_4		L_{tot}			45°	< 900 N f_z	< 900 N f_z
	Solid carbide roughing end mill													
	HPC		20 3037	20 3044	20 3044	20 3044	20 3037	20 3044						
mm	TiXSi	TiXSi	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
3	XXX	XXX	5	8	13	2.8	50	57	6	0.1	0.02	0.025		
4	XXX	XXX	8	11	17	3.8	54	57	6	0.1	0.02	0.025		
5	XXX	XXX	9	13	19	4.8	54	57	6	0.1	0.03	0.04		
6	XXX	XXX	10	13	19	5.8	54	57	6	0.1	0.04	0.05		
8	XXX	XXX	12	21	25	7.7	58	63	8	0.2	0.05	0.06		
10	XXX	XXX	14	22	30	9.7	66	72	10	0.2	0.06	0.08		
12	XXX	XXX	16	26	36	11.6	73	83	12	0.3	0.07	0.09		
14	XXX	XXX	16	26	36	13.6	73	83	14	0.3	0.08	0.1		
16	XXX	XXX	22	36	42	15.5	82	92	16	0.3	0.08	0.1		
18	XXX	XXX	22	36	42	17.5	82	92	18	0.3	0.1	0.13		
20	XXX	XXX	26	41	52	19.5	92	104	20	0.3	0.1	0.13		
25	–	XXX	–	68	78	24.5	–	136	25	0.3	0.12	0.16		

Solid carbide | Type N | 0 –0.03 | 4 | 38° | ≠ | ≠ | h6 DIN 6535 HB | HPC

HOLEX Pro Steel solid carbide roughing end mill HPC

For **roughing and finishing.**

20 3052 – Up to 1.5×D into solid material **at very high feed rates** with smooth cutting action.
At maximum boring depths, ensure compliance with the ratio dimension L_s (cutting length) / Ø (nominal size)!

20 3054 – Up to 1×D into solid material **at very high feed rates** with smooth cutting action. Dimensions to **manufacturer's standard.**

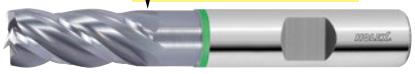
Advantage: Optimised flute form, eccentric relief ground, wide chip space.

DIN 6527 | a_e 0.5×D | 45°

20 3052

Standard | a_e 0.3×D | 45°

Ground recess



20 3054

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	Uni				
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	K					
20 3052/3054				260	240	180	160							80			250	●		●	○	●	●

Ø D_c	12X 20 3052	12X 20 3054	L_s	L_4	Ø D_4	L_{tot}		45°	< 900 N f_z	< 900 N f_z
	Pro Steel solid carbide roughing end mill									
	HPC		20 3052	20 3054	20 3054	20 3054	20 3052	20 3054				
mm	TiAlN	TiAlN	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
3	XXX	XXX	6	8	12	2.8	54	57	6	0.13	0.02	0.025
4	XXX	XXX	8	11	15	3.8	54	57	6	0.18	0.02	0.025
5	XXX	XXX	9	13	17	4.8	54	57	6	0.2	0.03	0.04
6	XXX	XXX	10	13	21	5.5	54	57	6	0.2	0.04	0.05
8	XXX	XXX	12	19	27	7.5	58	63	8	0.2	0.05	0.06
10	XXX	XXX	14	22	32	9.5	66	72	10	0.3	0.06	0.08
12	XXX	XXX	16	26	38	11.5	73	83	12	0.3	0.07	0.09
14	XXX	XXX	18	26	42	13.5	75	83	14	0.3	0.08	0.1
16	XXX	XXX	22	32	44	15.5	82	92	16	0.4	0.08	0.1
18	XXX	XXX	24	32	44	17.5	84	92	18	0.4	0.1	0.13
20	XXX	XXX	26	38	54	19.5	92	104	20	0.5	0.1	0.13
25	–	XXX	–	45	60	24.5	–	125	25	0.5	0.12	0.16

Solid carbide | Standard | Type N | 4 | 38° | ≠ | | a_e 0.25×D | h6 DIN 6535 HB | HPC

HOLEX Solid carbide roughing end mill HPC

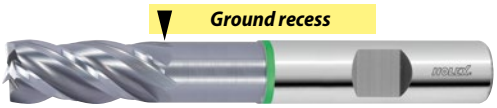
For **roughing and finishing.**
Up to 0.7×D into solid material **at very high feed rates** with smooth cutting action.

20 3047 – Without dynamic twist pitch.

Advantage: Optimised flute form, eccentric relief ground, wide chip space.

0 –0.03 | ≠ | 45°

Ground recess



20 3056

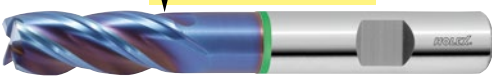
0 –0.03 | ≠ | 45°

Ground recess

20 3058

f8 | 45°

Ground recess



20 3047

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	Uni				
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	K					
20 3047				250	200	180	160							70			120	●		●	○	●	●
20 3056/3058				260	240	180	160							80			250	●		●	○	●	●

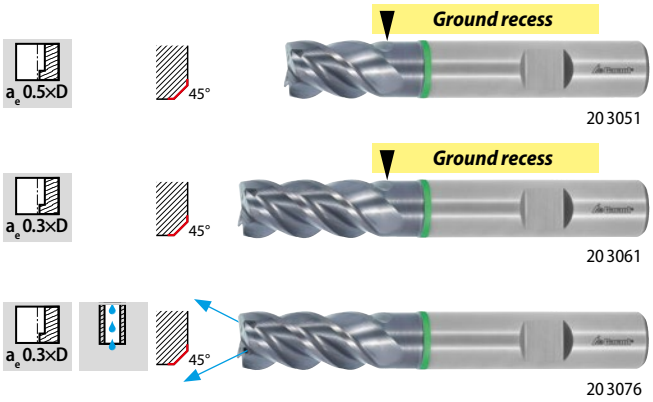
Ø D_c	12X 20 3056	12X 20 3058	12X 20 3047	L_s	L_4	Ø D_4	L_{tot}		45°		< 900 N f_z	< 900 N f_z
	Pro Steel solid carbide roughing end mill		Solid carbide roughing end mill									
	HPC			20 3056	20 3058 20 3047	20 3056	20 3058 20 3047	20 3056 20 3058	20 3047							
mm	TiAlN	TiAlN	TiXSi	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
5	XXX	XXX	–	13	18	25	24	4.8	–	62	6	0.2	–	0.03	0.04
6	XXX	XXX	XXX	13	18	25	24	5.5	5.8	62	6	0.2	0.1	0.04	0.05
8	XXX	XXX	XXX	19	24	32	30	7.5	7.7	68	8	0.2	0.2	0.05	0.06
10	XXX	XXX	XXX	22	30	40	38	9.5	9.7	80	10	0.3	0.2	0.06	0.08
12	XXX	XXX	XXX	26	36	48	46	11.5	11.6	93	12	0.3	0.3	0.07	0.09
16	XXX	XXX	XXX	32	48	56	58	15.5	15.5	108	16	0.4	0.3	0.08	0.1
20	XXX	XXX	XXX	38	60	70	74	19.5	19.5	126	20	0.5	0.3	0.1	0.13

Solid carbide | Standard | Type N | e8 | 4 | 45° | ≠ | h6 DIN 6535 HB | G 2.5 n_{max} | MTC

Garant® Solid carbide roughing end mill MTC

For **roughing and finishing** up to 1.5×D into solid material **at very high feed rates** with smooth cutting action.
For cutting force reduction and better surface quality due to **45° helix.**
Improved coating for a further reduction in cutting force combined with increased tool life.

Application: Especially for **MTC (Multi Task Cutting)** use on the new generation of turning / milling centres.



Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	K						
20 3051/3061				250	230	200	180	150						70	50		150	●		●	○	●	●
20 3076				250	230	200	180	150						80	60		170	●		●	○	●	●

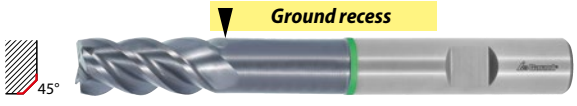
Ø e8 D_c	11X 20 3051	11X 20 3061	11X 20 3076	L_5		L_4		Ø D_4	L_{tot}			45°	< 900 N f_z
	Solid carbide roughing end mill												
	MTC	MTC	MTC with through-coolant	20 3051	20 3061 20 3076	20 3051	20 3061	20 3051 20 3061	20 3051	20 3061 20 3076			
mm	AlCrN	AlCrN	AlCrN	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
3	(XXX)	XXX	–	5	8	10	13	2.8	50	57	6	0.1	0.058
4	(XXX)	XXX	XXX	8	11	14	17	3.8	54	57	6	0.1	0.058
5	(XXX)	XXX	XXX	9	13	16	19	4.8	54	57	6	0.1	0.07
6	(XXX)	XXX	XXX	10	13	16	19	5.8	54	57	6	0.1	0.07
8	(XXX)	XXX	XXX	12	21	20	25	7.7	58	63	8	0.2	0.07
10	(XXX)	XXX	XXX	14	22	24	30	9.7	66	72	10	0.2	0.09
12	(XXX)	XXX	XXX	16	26	26	36	11.6	73	83	12	0.3	0.09
14	(XXX)	XXX	–	16	26	26	36	13.6	73	83	14	0.3	0.13
16	(XXX)	XXX	XXX	22	36	32	42	15.5	82	92	16	0.3	0.13
18	(XXX)	XXX	–	22	36	32	42	17.5	82	92	18	0.3	0.155
20	(XXX)	XXX	XXX	26	41	40	52	19.5	92	104	20	0.3	0.155

Solid carbide | Standard | Type N | e8 | 4 | 45° | ≠ | a_e 0.1×D | h6 DIN 6535 HB | G 2.5 n_{max} | MTC

Garant® Solid carbide roughing end mill MTC

For **roughing and finishing** up to 0.7×D into solid material **at very high feed rates** with smooth cutting action.
For cutting force reduction and better surface quality due to **45° helix.**
Improved coating for a further reduction in cutting force combined with increased tool life.

Application: Especially for **MTC (Multi Task Cutting)** use on the new generation of turning / milling centres.



Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	K						
20 3071				100	90	85	80							40	30		100	●		●	○	●	●

Ø e8 D_c	11X 20 3071	L_5	L_4	Ø D_4	L_{tot}		45°	< 900 N f_z	< 900 N f_z
	Solid carbide roughing end mill								
	MTC								
mm	AlCrN	mm	mm	mm	mm	mm	mm	mm	mm
6	XXX	13	42	5.8	80	6	0.1	0.03	0.04
8	XXX	21	62	7.7	100	8	0.2	0.03	0.04
10	XXX	22	58	9.7	100	10	0.2	0.04	0.05
12	XXX	26	73	11.6	120	12	0.3	0.04	0.05
16	XXX	36	100	15.5	150	16	0.3	0.05	0.065
20	XXX	41	98	19.5	150	20	0.3	0.06	0.08

Solid carbide | Standard | Type W | h6 | 38° | TPC

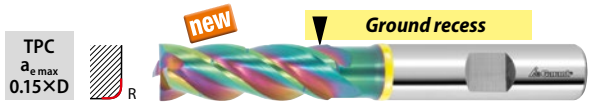
4 | 5 | h6 DIN 6535 HA | h6 DIN 6535 HB | G 2.5 n_{max} | G 2.5 n_{max}

Garant

GARANT Master Alu milling cutter TPC with more chip separators

Specially designed for TPC high-performance milling.
Optimised bending strength due to the use of ultra-fine grain substrates.
1×D chip separator for controlled chip breaking.
Balanced for very high process reliability and protecting the machine at high speeds.
Application: Especially for milling **aluminium and non-ferrous metals.**

Note:
20 3113 – h_{max}: The values stated in the table are maximum values. ae_{max} = 0.15×D for TPC machining.
20 3114 – h_{max}: The values stated in the table are maximum values. ae_{max} = 0.12×D for TPC machining.
20 3115 – h_{max}: The values stated in the table are maximum values. ae_{max} = 0.1×D for TPC machining.



20 3113

20 3114

20 3115

Suitable for/ v_c [m/min]	Alu	Alu	Alu cast > 10 % Si	PMMA acrylic	PE-HD	PA 66	PEEK	PF 31	AFRP aramid	PVDF GF20	POM GF25	PA 66 GF30	PEEK GF30	PTFE CF25	PEEK CF30	Honey-comb sandwich	Cu	CuZn					
ISO code	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N					
20 3113	550	500	450	200	160	200	150	130		180	160	150	130	160		300	160	200		●	○	●	●
20 3114/3115	500	450	400	180	140	180	130	110		160	140	120	140	260		260	140	120		●	○	●	●

∅ h6 D_c	11X 20 3113	No. of teeth Z	L_s	L_4	∅ D_4	L_{tot}		Shank form	R	TPC Alu h_{max}
	GARANT Master Alu solid carbide milling cutter with more chip separators									
	TPC									
mm	DLC		mm	mm	mm	mm	mm		mm	mm
5	XXX	4	17	24	4.5	65	6	HA	0.05	0.036
6	XXX	4	18	25	5.5	65	6	HA	0.05	0.043
8	XXX	4	24	30	7.5	70	8	HA	0.1	0.057
10	XXX	4	30	35	9.5	80	10	HB	0.1	0.071
12	XXX	4	36	45	11	93	12	HB	0.1	0.086
16	XXX	5	48	55	15	110	16	HB	0.2	0.114
20	XXX	5	60	70	19	125	20	HB	0.2	0.143

∅ h6 D_c	11X 20 3114	11X 20 3115	No. of teeth Z	L_s		L_4		∅ D_4	L_{tot}			Shank form	R	TPC Alu h_{max}	
	GARANT Master Alu solid carbide milling cutter with more chip separators														
	TPC			20 3114	20 3115	20 3114	20 3115		20 3114	20 3115				20 3114	20 3115
mm	DLC	DLC		mm	mm	mm	mm	mm	mm	mm	mm		mm	mm	mm
4	XXX	–	4	17	–	23	–	3.7	65	–	6	HA	0.05	0.026	–
5	XXX	XXX	4	21	26	30	36	4.5	70	75	6	HA	0.05	0.032	0.03
6	XXX	XXX	4	25	31	30	36	5.5	70	75	6	HA	0.05	0.039	0.036
8	XXX	XXX	4	33	41	40	48	7.5	80	90	8	HA	0.1	0.052	0.048
10	XXX	XXX	4	41	51	50	60	9.5	90	104	10	HB	0.1	0.065	0.06
12	XXX	XXX	4	49	61	60	72	11	110	120	12	HB	0.1	0.078	0.072
16	XXX	XXX	5	65	81	80	96	15	130	150	16	HB	0.2	0.104	0.096
20	XXX	XXX	5	82	102	100	120	19	150	175	20	HB	0.2	0.13	0.12

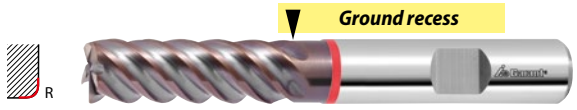
Solid carbide | Standard | Type H | f8 | 5 | 45° | TPC $a_{e\,max}$ 0.05×D | h6 DIN 6535 HB | G 2.5 n_{max} | TPC

Garant® Solid carbide milling cutter TPC / Solid carbide milling cutter TPC with chip separators

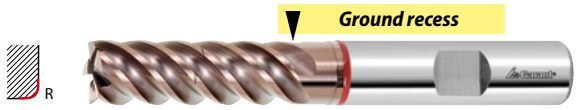
High-performance slot drill for machining materials up to 60 HRC, **specially designed for TPC applications**.
Strengthened core. With corner radii similar to torus cutters.

20 3079 – **Chip breakers for controlled chip breaking.**

Note: $h_{m\,max}$: the values stated in the table are maximum values.
$a_{e\,max}$ = 0.05×D for TPC machining.



20 3077



20 3079

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 50 HRC	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	Graphite GRP CRP					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	H	M	M	S	N					
20 3077/3079								150	140	125	110											○	●

Ø f8 D_c	11X 20 3077 Solid carbide milling cutter TPC	11X 20 3079 Solid carbide milling cutter with chip separators TPC	L_5	L_4	Ø D_4	L_{tot}		R	TPC < 60 HRC h_{max}
mm	TiAlN	TiAlN	mm	mm	mm	mm	mm	mm	mm
6	XXX	XXX	18	25	5.8	62	6	0.1	0.02
8	XXX	XXX	24	30	7.8	68	8	0.2	0.022
10	XXX	XXX	30	35	9.8	80	10	0.2	0.031
12	XXX	XXX	36	45	11.8	93	12	0.3	0.035
14	XXX	XXX	42	50	13.8	99	14	0.3	0.043
16	XXX	XXX	48	55	15.8	108	16	0.3	0.049
20	XXX	XXX	60	70	19.8	126	20	0.3	0.062

Solid carbide | Standard | Type N | f8 | 5 | 45° | h6 DIN 6535 HB | G 2.5 n_{max} | TPC

Garant® Solid carbide milling cutter TPC with chip separators

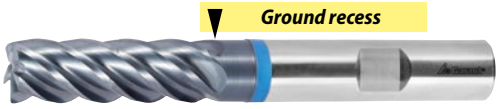
Strengthened core.

20 3019 – High-performance mills for machining stainless steels, **specially designed for TPC applications**.

20 3083 – High-performance miller for machining superalloys, **specially designed for TPC applications**.

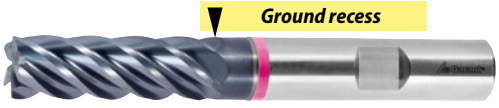
Note: $h_{m\,max}$: The values stated in the table are maximum values.
20 3019 – $a_{e\,max}$ = 0.08×D for TPC machining.
NEW GENERATION AVAILABLE!
Recommended successor product is No. 203103
20 3083 – $a_{e\,max}$ = 0.06×D for TPC machining.

TPC $a_{e\,max}$ 0.08×D | 45°



20 3019

TPC $a_{e\,max}$ 0.06×D | R



20 3083

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	Inconel®	Graphite GRP CRP					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	S	N					
20 3019				380	340	300	230							240	170				●	○		●	
20 3083																180	90		●				

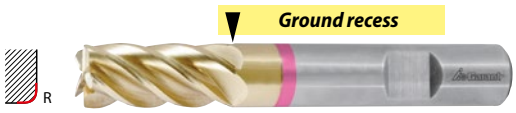
Ø f8 D_c	11X 20 3019 Solid carbide milling cutter with chip separators TPC	11X 20 3083	L_5	L_4	Ø D_4	L_{tot}		45°	R	TPC INOX < 900 N h_{max}	TPC INOX > 900 N h_{max}	TPC Ti > 850 N h_{max}	TPC Inconel® h_{max}
mm	TiAlN	TiAlN	mm	mm	mm	mm	mm	20 3019 mm	20 3083 mm	20 3019 mm	20 3019 mm	20 3083 mm	20 3083 mm
4	XXX	–	16	23	3.9	62	6	0.08	–	0.025	0.02	–	–
5	XXX	–	17	24	4.8	62	6	0.1	–	0.03	0.025	–	–
6	XXX	XXX	18	25	5.8	62	6	0.12	0.1	0.04	0.03	0.04	0.035
8	XXX	XXX	24	30	7.8	68	8	0.16	0.2	0.05	0.04	0.045	0.04
10	XXX	XXX	30	35	9.8	80	10	0.2	0.2	0.06	0.05	0.06	0.05
12	XXX	XXX	36	45	11.8	93	12	0.24	0.3	0.07	0.06	0.07	0.06
14	XXX	XXX	42	50	13.8	99	14	0.28	0.3	0.08	0.07	0.075	0.065
16	XXX	XXX	48	55	15.8	108	16	0.32	0.3	0.09	0.075	0.085	0.07
20	XXX	XXX	60	70	19.8	126	20	0.4	0.3	0.125	0.105	0.11	0.09

Solid carbide | DIN 6527 | Type N | e8 | 5 | 38° | TPC $a_{e\,max}$ 0.08×D | a_e 0.3×D | h6 DIN 6535 HB | G 2.5 n_{max} | MTC | TPC

GARANT Solid carbide milling cutter MTC / TPC

Specially ground with corner radii similar to torus cutters and **special coating** for best tool life and high metal removal rates.
Dimensions to DIN 6527 long.

Application: For milling **titanium** and **high temperature steels.** Especially for **MTC (Multi Task Cutting)** use on the new generation of turning / milling centres.



20 3082

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	Inconel®	Graphite GRP CRP
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	S	N
20 3082																55	25	

Ø e8 D_c	11X	20 3082	L_s	L_4	Ø D_4	L_{tot}		R	Ti > 850 N f_z
		Solid carbide milling cutter MTC / TPC							
mm		TiAlN	mm	mm	mm	mm	mm	mm	mm
3		XXX	8	13	2.8	57	6	0.1	0.015
4		XXX	11	17	3.8	57	6	0.1	0.018
5		XXX	13	19	4.8	57	6	0.1	0.022
6		XXX	13	19	5.8	57	6	0.1	0.026
8		XXX	21	25	7.7	63	8	0.2	0.034
10		XXX	22	30	9.7	72	10	0.2	0.042
12		XXX	26	36	11.6	83	12	0.2	0.05
16		XXX	36	42	15.5	92	16	0.3	0.065
20		XXX	41	52	19.5	104	20	0.3	0.08

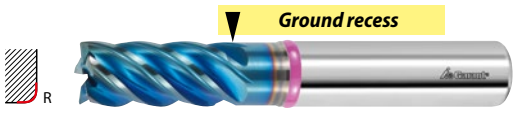
Solid carbide | DIN 6527 | Type N | e8 | 5 | 40° | a_e 0.3×D | TPC $a_{e\,max}$ 0.08×D | h6 DIN 6535 HA | HPC | TPC

GARANT Master Titan solid carbide HPC/TPC milling cutters

For roughing and finishing at very high feed rates and smooth cutting action for the best tool life and high metal removal rate.
Specially ground with corner radii similar to torus cutters and **special coating.**
Dimensions to DIN 6527 long.

Application: For milling **titanium and titanium alloys.**

Note: Can be reground when used as a TPC milling cutter.



20 3157

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	Graphite GRP CRP	Uni
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	N	
20 3157																60		

Ø e8 D_c	11Z	20 3157	L_s	L_4	Ø D_4	L_{tot}		R	Ti > 850 N f_z	Ti > 850 N f_z
		GARANT Master Titan solid carbide milling cutter HPC/TPC								
mm		TiAlN	mm	mm	mm	mm	mm	mm	mm	mm
4		XXX	11	16	3.8	57	6	0.1	0.015	0.018
5		XXX	13	18	4.8	57	6	0.1	0.018	0.022
6		XXX	13	20	5.8	57	6	0.1	0.022	0.026
8		XXX	19	25	7.7	63	8	0.2	0.028	0.034
10		XXX	22	32	9.7	72	10	0.2	0.034	0.042
12		XXX	26	38	11.6	83	12	0.2	0.04	0.05
16		XXX	32	44	15.5	92	16	0.3	0.05	0.065
20		XXX	41	54	19.5	104	20	0.3	0.06	0.08

Solid carbide | Standard | Type N | f8 | 5 | 40° | ≠ | h6 DIN 6535 HB | G 2.5 n_{max} | TPC

Garant

Solid carbide milling cutter TPC / Solid carbide milling cutter TPC with chip separators

High-performance milling cutter specially designed for general-purpose TPC applications. Strengthened core. **Optimised bending strength** due to the use of ultra-fine grain substrates.

Note:
h_{max}: The values stated in the table are maximum values.
20 3088 – $a_{e\,max}$ = 0.1×D for TPC machining.
20 3089 – $a_{e\,max}$ = 0.07×D for TPC machining.

TPC $a_{e\,max}$ 0.1×D, 45°

Ground recess

20 3088

TPC $a_{e\,max}$ 0.07×D, 45°

Ground recess

20 3089

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	TOOLOX® 33 HRC	TOOLOX® 44 HRC	HARDOX® 500 < 1600 N	INOX < 900 N	INOX > 900 N	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	H	H	M	M						
20 3088/3089				380	340	300	230	150					60	40	25	220	150	●		●		○	●

Ø f8 D_c	11X 20 3088	11X 20 3089	L_s		L_4		Ø D_4	L_{tot}			45°	TPC TOOLOX® 44 HRC h_{max}	
	Solid carbide milling cutter	Solid carbide milling cutter with chip separators											
	TPC		20 3088	20 3089	20 3088	20 3089		20 3088	20 3089			20 3088	20 3089
mm	TiAlN	TiAlN	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
4	XXX	XXX	11	16	–	23	3.9	57	62	6	0.08	0.02	0.018
5	XXX	XXX	13	17	–	24	4.8	57	62	6	0.1	0.025	0.023
6	XXX	XXX	13	18	19	25	5.8	57	62	6	0.12	0.035	0.032
8	XXX	XXX	19	24	25	30	7.8	63	68	8	0.16	0.045	0.042
10	XXX	XXX	22	30	30	35	9.8	72	80	10	0.2	0.055	0.051
12	XXX	XXX	26	36	36	45	11.8	83	93	12	0.24	0.065	0.06
14	–	XXX	–	42	–	50	13.8	–	99	14	0.28	–	0.069
16	XXX	XXX	32	48	42	55	15.8	92	108	16	0.32	0.085	0.078
20	XXX	XXX	41	60	52	70	19.8	104	126	20	0.4	0.105	0.097

Solid carbide | Standard | Type N | f8 | 5 | 40° | ≠ | h6 DIN 6535 HB | G 2.5 n_{max} | TPC

Garant

Solid carbide miling cutter TPC with chip separators

High-performance end mills for general-purpose machining, **specially designed for TPC applications**. Strengthened core. Offset chip breaker. **Optimised bending strength** due to the use of ultra-fine grain substrates.

Note:
h_{max}: The values stated in the table are maximum values.
20 3090 – $a_{e\,max}$ = 0.05×D for TPC machining.
20 3091 – $a_{e\,max}$ = 0.03×D for TPC machining.

TPC $a_{e\,max}$ 0.05×D, 45°

20 3090

TPC $a_{e\,max}$ 0.03×D, 45°

20 3091

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	TOOLOX® 33 HRC	TOOLOX® 44 HRC	HARDOX® 500 < 1600 N	INOX < 900 N	INOX > 900 N	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	H	H	M	M						
20 3090				380	340	300	230	150					60	40	25	220	150	●		●		○	●
20 3091				350	310	270	200	120					50	30	20	190	120	●		●		○	●

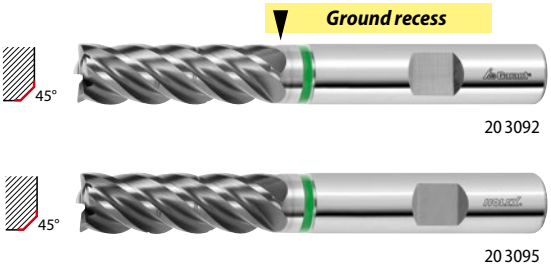
Ø f8 D_c	11X 20 3090	11X 20 3091	L_s		L_{tot}			45°	TPC TOOLOX® 44 HRC h_{max}	
	Solid carbide milling cutter with chip separators									
	TPC		20 3090	20 3091	20 3090	20 3091			20 3090	20 3091
mm	TiAlN	TiAlN	mm	mm	mm	mm	mm	mm	mm	mm
5	XXX	–	20	–	66	–	6	0.1	0.021	–
6	XXX	–	24	–	66	–	6	0.12	0.029	–
8	XXX	XXX	32	40	74	81	8	0.16	0.038	0.03
10	XXX	XXX	40	50	89	96	10	0.2	0.046	0.037
12	XXX	XXX	48	60	100	112	12	0.24	0.054	0.044
16	XXX	XXX	64	80	123	136	16	0.32	0.071	0.057
20	XXX	XXX	80	100	140	160	20	0.4	0.088	0.07

Solid carbide | Standard | Type N | f8 | 5 | 40° | ≠ | TPC $a_{e\,max}$ 0.07×D | h6 DIN 6535 HB | G 2.5 n_{max} | TPC

Solid carbide TPC milling cutters with more chip separators

High-performance milling cutter specially designed for general-purpose TPC applications.
Strengthened core.
Optimised bending strength due to the use of ultra-fine grain substrates.
Chip separator for controlled chip breaking.

Note: h_{max}: The values stated in the table are maximum values.
$a_{e\,max}$ = 0.07×D for TPC machining.



20 3092

20 3095

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	TOOLOX® 33 HRC	TOOLOX® 44 HRC	HARDOX® 500 < 1600 N	INOX < 900 N	INOX > 900 N	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	H	H	M	M						
20 3092/3095				380	340	300	230	150					60	40	25	220	150	●		●		○	●

Ø f8 D_c	11X 20 3092	12X 20 3095	L_s	L_4	Ø D_4	L_{tot}		45°	TOOLOX® 44 HRC h_{max}
	Garant	HOLEX							
	Solid carbide milling cutter with more chip separators								
	TPC								
mm	TiAlN	TiAlN	mm	mm	mm	mm	mm	mm	mm
4	–	XXX	16	23	3.9	62	6	0.08	0.018
5	–	XXX	17	24	4.8	62	6	0.1	0.023
6	–	XXX	18	25	5.8	62	6	0.12	0.032
8	–	XXX	24	30	7.8	68	8	0.16	0.042
10	–	XXX	30	35	9.8	80	10	0.2	0.051
12	XXX	XXX	36	45	11.8	93	12	0.24	0.06
14	XXX	XXX	42	50	13.8	99	14	0.28	0.069
16	XXX	XXX	48	55	15.8	108	16	0.32	0.078
20	XXX	XXX	60	70	19.8	126	20	0.4	0.097

Solid carbide | Standard | Type N | f8 | 5 | 40° | ≠ | h6 DIN 6535 HB | G 2.5 n_{max} | TPC

Garant

Solid carbide TPC milling cutters with more chip separators

High-performance milling cutter specially designed for general-purpose TPC applications.
Strengthened core.
Optimised bending strength due to the use of ultra-fine grain substrates.
Chip separator for controlled chip breaking.

Note: h_{max}: The values stated in the table are maximum values.
20 3093 – $a_{e\,max}$ = 0.05×D for TPC machining.
20 3094 – $a_{e\,max}$ = 0.03×D for TPC machining.

TPC $a_{e\,max}$ 0.05×D 45°

20 3093

TPC $a_{e\,max}$ 0.03×D 45°

20 3094

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	TOOLOX® 33 HRC	TOOLOX® 44 HRC	HARDOX® 500 < 1600 N	INOX < 900 N	INOX > 900 N	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	H	H	M	M						
20 3093				380	340	300	230	150					60	40	25	220	150	●		●		○	●
20 3094				350	310	270	200	120					50	30	20	190	120	●		●		○	●

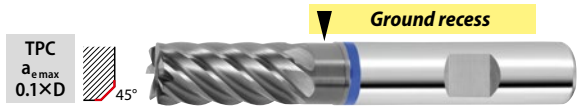
Ø f8 D_c	11X 20 3093	11X 20 3094	L_s		L_{tot}			45°	TOOLOX® 44 HRC h_{max}	
	Solid carbide milling cutter with more chip separators									
	TPC		20 3093	20 3094	20 3093	20 3094			20 3093	20 3094
mm	TiAlN	TiAlN	mm	mm	mm	mm	mm	mm	mm	mm
5	XXX	–	20	–	66	–	6	0.1	0.021	–
6	XXX	–	24	–	66	–	6	0.12	0.029	–
8	XXX	XXX	32	40	74	81	8	0.16	0.038	0.03
10	XXX	XXX	40	50	89	96	10	0.2	0.046	0.037
12	XXX	XXX	48	60	100	112	12	0.24	0.054	0.044
16	XXX	XXX	64	80	123	136	16	0.32	0.071	0.057
20	XXX	XXX	80	100	140	160	20	0.4	0.088	0.07

Solid carbide | Standard | Type N | f8 | 7 | 40° | ≠ | ≠ | h6 DIN 6535 HB | G 2.5 n_{max} | TPC

Garant Solid carbide milling cutter TPC / Solid carbide milling cutter TPC with chip separators

High-performance milling cutter with **irregular cutter spacing** and **irregular helical pitch.** Optimised bending strength due to the use of ultra-fine grain substrates.
Offset chip separators.

Note: h_{max}: The values stated in the table are maximum values.
20 3102 – $a_{e\,max}$ = 0.1×D for TPC machining.
20 3103 – $a_{e\,max}$ = 0.07×D for TPC machining.



20 3102

20 3103

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	Graphite GRP CRP	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	N						
20 3102/3103				380	340	300	230							240	170				●	○		●	

Ø f8 D_c	11X 20 3102 Solid carbide milling cutter TPC TiAlN	11X 20 3103 Solid carbide milling cutter with chip separators TPC TiAlN	L_s 20 3102	L_s 20 3103	L_4 20 3102	L_4 20 3103	Ø D_4	L_{tot} 20 3102	L_{tot} 20 3103		45°	TPC INOX < 900 N h_{max} 20 3102	TPC INOX < 900 N h_{max} 20 3103
mm			mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
4	XXX	XXX	11	16	–	23	3.9	57	62	6	0.08	0.02	0.018
5	XXX	XXX	13	17	–	24	4.8	57	62	6	0.1	0.025	0.023
6	XXX	XXX	13	18	19	25	5.8	57	62	6	0.12	0.035	0.032
8	XXX	XXX	19	24	25	30	7.8	63	68	8	0.16	0.045	0.042
10	XXX	XXX	22	30	30	35	9.8	72	80	10	0.2	0.055	0.051
12	XXX	XXX	26	36	36	45	11.8	83	93	12	0.24	0.065	0.06
14	–	XXX	–	42	–	50	13.8	–	99	14	0.28	–	0.069
16	XXX	XXX	32	48	42	55	15.8	92	108	16	0.32	0.085	0.078
20	XXX	XXX	41	60	52	70	19.8	104	126	20	0.4	0.105	0.097

Solid carbide | Standard | Type N | f8 | 7 | 40° | ≠ | ≠ | h6 DIN 6535 HB | G 2.5 n_{max} | TPC

Garant Solid carbide milling cutter TPC with chip separators

High-performance milling cutter with **irregular cutter spacing** and **irregular helical pitch.** Optimised bending strength due to the use of ultra-fine grain substrates.
Offset chip separators.

Advantage:
20 3104 Size 5; 6 – Long cutters even with small tool diameters.

Note: h_{max}: The values stated in the table are maximum values.
20 3104 – $a_{e\,max}$ = 0.05×D for TPC machining.
20 3105 – $a_{e\,max}$ = 0.03×D for TPC machining.

20 3104

20 3105

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	Graphite GRP CRP	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	N						
20 3104				320	290	260	200							220	160				●	○		●	
20 3105				270	240	210	160							200	140				●	○		●	

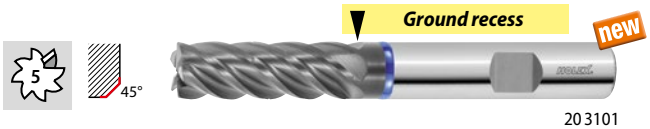
Ø f8 D_c	11X 20 3104 Solid carbide milling cutter with chip separators TPC TiAlN	11X 20 3105 Solid carbide milling cutter with chip separators TPC TiAlN	L_s 20 3104	L_s 20 3105	L_{tot} 20 3104	L_{tot} 20 3105		45°	TPC INOX < 900 N h_{max} 20 3104	TPC INOX < 900 N h_{max} 20 3105
mm			mm	mm	mm	mm	mm	mm	mm	mm
5	XXX	–	20	–	66	–	6	0.1	0.021	–
6	XXX	–	24	–	66	–	6	0.12	0.029	–
8	XXX	XXX	32	40	74	81	8	0.16	0.38	0.03
10	XXX	XXX	40	50	89	96	10	0.2	0.046	0.037
12	XXX	XXX	48	60	100	112	12	0.24	0.054	0.044
16	XXX	XXX	64	80	123	136	16	0.32	0.071	0.057
20	XXX	XXX	80	100	140	160	20	0.4	0.088	0.07

Solid carbide | Standard | Type N | f8 | 40° | ≠ | TPC $a_{e\,max}$ 0.07×D | h6 DIN 6535 HB | G 2.5 n_{max} | TPC

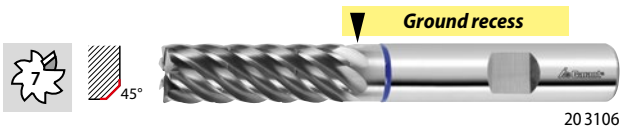
Solid carbide TPC milling cutter with chip separators / with more chip separators

High-performance milling cutter with **irregular cutter spacing** and **irregular helical pitch.** Optimised bending strength due to the use of ultra-fine grain substrates.
Chip separator for controlled chip breaking.

Note: h_{max}: The values stated in the table are maximum values.
$a_{e\,max}$ = 0.07×D for TPC machining.



20 3101



20 3106

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	Graphite GRP CRP	Uni
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	N	
20 3101/3106				380	340	300	230							240	170			

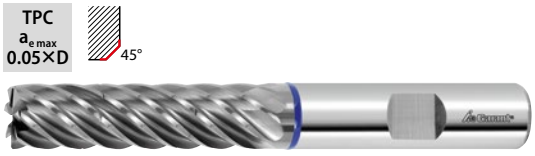
Ø f8 D_c	12X 20 3101 HOLEX Solid carbide milling cutter with chip separators TPC	11X 20 3106 Garant Solid carbide milling cutter with more chip separators TPC	L_s	L_4	Ø D_4	L_{tot}		45°	TPC INOX < 900 N h_{max}
mm	TiAlN	TiAlN	mm	mm	mm	mm	mm	mm	mm
4	XXX	–	16	23	3.9	62	6	0.08	0.018
5	XXX	–	17	24	4.8	62	6	0.1	0.023
6	XXX	–	18	25	5.8	62	6	0.12	0.032
8	XXX	–	24	30	7.8	68	8	0.16	0.042
10	XXX	–	30	35	9.8	80	10	0.2	0.051
12	XXX	XXX	36	45	11.8	93	12	0.24	0.06
14	–	XXX	42	50	13.8	99	14	0.28	0.069
16	XXX	XXX	48	55	15.8	108	16	0.32	0.078
20	XXX	XXX	60	70	19.8	126	20	0.4	0.097

Solid carbide | Standard | Type N | f8 | 7 | 40° | ≠ | h6 DIN 6535 HB | G 2.5 n_{max} | TPC

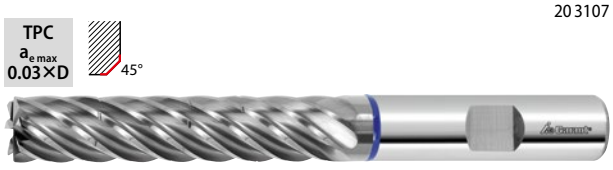
Garant Solid carbide TPC milling cutters with more chip separators

High-performance milling cutter with **irregular cutter spacing** and **irregular helical pitch.** Optimised bending strength due to the use of ultra-fine grain substrates.
Chip separator for controlled chip breaking.
20 3107 Size 5; 6 – Long cutters even with small tool diameters.

Note: h_{max}: The values stated in the table are maximum values.
20 3107 – $a_{e\,max}$ = 0.05×D for TPC machining.
20 3108 – $a_{e\,max}$ = 0.03×D for TPC machining.



20 3107



20 3108

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	Graphite GRP CRP	Uni
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	N	
20 3107				320	290	260	200							220	160			
20 3108				270	240	210	160							200	140			

Ø f8 D_c	11X 20 3107	11X 20 3108 Solid carbide milling cutter with more chip separators TPC	L_s		L_{tot}			45°	TPC INOX < 900 N h_{max}	
			20 3107	20 3108	20 3107	20 3108			20 3107	20 3108
mm	TiAlN	TiAlN	mm	mm	mm	mm	mm	mm	mm	mm
5	XXX	–	20	–	66	–	6	0.1	0.021	–
6	XXX	–	24	–	66	–	6	0.12	0.029	–
8	XXX	XXX	32	40	74	81	8	0.16	0.038	0.3
10	XXX	XXX	40	50	89	96	10	0.2	0.046	0.037
12	XXX	XXX	48	60	100	112	12	0.24	0.054	0.044
16	XXX	XXX	64	80	123	136	16	0.32	0.071	0.057
20	XXX	XXX	80	100	140	160	20	0.4	0.088	0.07

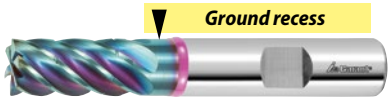
Solid carbide | Standard | Type N | e8 | 6 | 40° | ≠ | ≠ | h5 DIN 1835 B | G 2.5 n_{max} | TPC

GARANT Master Titan solid carbide TPC milling cutters with more chip separators

High-performance milling cutter specially designed for general-purpose TPC applications.
Strengthened core.
Optimised bending strength due to the use of ultra-fine grain substrates.
Application: Especially for milling **titanium and titanium alloys.**

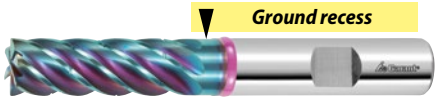
Note: h_{max}: The values stated in the table are maximum values.
20 3122 – $a_{e\,max}$: = 0.08 × D for TPC machining.
20 3123 – $a_{e\,max}$: = 0.06 × D for TPC machining.
20 3124 – $a_{e\,max}$: = 0.04 × D for TPC machining.

TPC $a_{e\,max}$ 0.08×D R



20 3122

TPC $a_{e\,max}$ 0.06×D R



20 3123

TPC $a_{e\,max}$ 0.04×D R

20 3124

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	Graphite GRP CRP	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	N						
20 3122/3123																180			●				
20 3124																160			●				

Ø e8 D_c	11Z 20 3122	11Z 20 3123	L_s		L_4		Ø D_4	L_{tot}			R	TPC Ti > 850 N h_{max}
	GARANT Master Titan solid carbide milling cutter with more chip separators TPC		20 3122	20 3123	20 3122	20 3123		20 3122	20 3123			
mm	TiAlN	TiAlN	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
4	XXX	XXX	11	16	–	23	3.9	57	62	6	0.1	0.03
5	XXX	XXX	13	17	–	24	4.8	57	62	6	0.1	0.035
6	XXX	XXX	13	18	19	25	5.8	57	62	6	0.1	0.04
8	XXX	XXX	19	24	25	30	7.8	63	70	8	0.2	0.045
10	XXX	XXX	22	30	30	35	9.8	73	80	10	0.2	0.06
12	XXX	XXX	26	36	36	45	11.8	83	93	12	0.2	0.07
16	XXX	XXX	32	48	42	55	15.8	93	110	16	0.2	0.085
20	XXX	XXX	41	60	52	70	19.8	104	125	20	0.3	0.11

Ø e8 D_c	11Z 20 3124	L_s	L_{tot}		R	TPC Ti > 850 N h_{max}
	GARANT Master Titan solid carbide milling cutter with more chip separators TPC					
mm	TiAlN	mm	mm	mm	mm	mm
5	XXX	20	67	6	0.1	0.028
6	XXX	24	67	6	0.1	0.032
8	XXX	32	80	8	0.2	0.036
10	XXX	40	90	10	0.2	0.048
12	XXX	48	100	12	0.2	0.056
16	XXX	64	120	16	0.3	0.068
20	XXX	80	140	20	0.3	0.088

Solid carbide | Standard | Type W | e8 | 5 | 38° | ≠ | h6 DIN 6535 HA | G 2.5 n_{max} | HPC

GARANT Master Alu solid carbide finishing cutters, HPC

For finishing operations.
Special geometry for optimum chip evacuation.
Unequal spacing gives high intrinsic stability and smooth cutting action.
For profile milling as a finishing operation.

20 3203

20 3204

20 3205

Suitable for/ v_c [m/min]	Alu	Alu	Alu cast > 10 % Si	PMMA acrylic	PE-HD	PA 66	PEEK	PF 31	AFRP aramid	PVDF GF20	POM GF25	PA 66 GF30	PEEK GF30	PTFE CF25	PEEK CF30	Honey-comb sandwich	Cu	CuZn					
ISO code	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N					
20 3203	550	500	450	200	160	200	150	130		180	160	150	130	160		300	160	200		●	○	●	●
20 3204/3205	500	450	400	180	140	180	130	110		160	140	140	120	140		260	140	120		●	○	●	●

Ø e8 D_C	11X 20 3203	L_5	L_4	Ø D_4	L_{tot}		Alu f_z
	GARANT Master Alu solid carbide milling cutters, HPC						
	HPC						
mm	DLC	mm	mm	mm	mm	mm	mm
4	XXX	16	23	3.8	65	6	0.05
6	XXX	18	25	5.8	65	6	0.05
8	XXX	24	30	7.8	70	8	0.06
10	XXX	30	35	9.5	80	10	0.065
12	XXX	36	45	11.5	93	12	0.07
16	XXX	48	55	15.5	110	16	0.08
20	XXX	60	70	19.5	125	20	0.09

Ø e8 D_C	11X 20 3204	11X 20 3205	L_5		L_4		Ø D_4	L_{tot}			Alu f_z	
	GARANT Master Alu solid carbide milling cutters, HPC											
	HPC		20 3204	20 3205	20 3204	20 3205		20 3204	20 3205		20 3204	20 3205
mm	DLC	DLC	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
6	XXX	–	24	–	32	–	5.8	65	–	6	0.045	–
8	XXX	XXX	32	40	40	48	7.8	75	80	8	0.05	0.04
10	XXX	XXX	40	50	48	58	9.5	90	100	10	0.06	0.05
12	XXX	XXX	48	60	56	68	11.5	100	119	12	0.06	0.05
16	XXX	XXX	64	80	72	88	15.5	125	134	16	0.07	0.06
20	XXX	XXX	80	100	88	108	19.5	150	175	20	0.08	0.07

Solid carbide | Type N | h10 | 45°

6 | 8

HOLEX Solid carbide milling cutter

High stability and **extremely smooth cutting action**
due to at least 6 teeth.
Eccentric relief ground.

Application: **For peripheral milling** as a **finishing operation.**

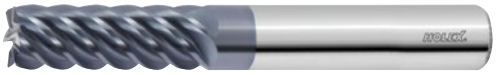
DIN 6527 | a_e 0.1×D | h6 DIN 6535 HA | 45°

20 3510

DIN 6527 | a_e 0.1×D | h6 DIN 6535 HB | 45°

20 3520

Standard | a_e 0.05×D | h6 DIN 6535 HA | 45°



20 3610

Standard | a_e 0.05×D | h6 DIN 6535 HA | 45°

20 3612

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	K						
20 3510/3520		600	400	190	170	160	95	85						90			120	○		●	○	○	○
20 3610/3612		600	400	190	170	160	95							90			120	○		●	○	○	○

Ø h10 D_c	12X 20 3510	12X 20 3520	No. of teeth Z	L_s	L_{tot}		45°	< 900 N f_z
	Solid carbide milling cutter							
mm	TiAlN	TiAlN		mm	mm	mm	mm	mm
5	XXX	XXX	6	13	57	6	0.1	0.032
6	XXX	XXX	6	13	57	6	0.1	0.054
8	XXX	XXX	6	19	63	8	0.1	0.063
10	XXX	XXX	6	22	72	10	0.1	0.072
12	XXX	XXX	6	26	83	12	0.1	0.08
16	XXX	XXX	6	32	92	16	0.1	0.089
20	XXX	XXX	8	38	104	20	0.1	0.107

Ø h10 D_c	12X 20 3610	12X 20 3612	No. of teeth Z	L_s		L_{tot}			45°	< 900 N f_z
	Solid carbide milling cutter			20 3610	20 3612	20 3610	20 3612			
mm	TiAlN	TiAlN		mm	mm	mm	mm	mm	mm	mm
2	XXX	–	6	6.5	–	62	–	6	0.05	0.016
3	XXX	–	6	10	–	62	–	6	0.05	0.016
4	XXX	–	6	16	–	62	–	6	0.1	0.032
5	XXX	XXX	6	18	20	62	70	6	0.1	0.032
6	XXX	XXX	6	18	24	62	70	6	0.1	0.054
8	XXX	XXX	6	23	32	68	90	8	0.1	0.063
10	XXX	XXX	6	30	40	80	100	10	0.1	0.072
12	XXX	XXX	6	36	48	93	110	12	0.1	0.08
16	XXX	XXX	6	48	64	108	130	16	0.1	0.089
20	XXX	XXX	8	60	80	126	140	20	0.1	0.107
25	XXX	–	8	75	–	150	–	25	0.1	0.107

Solid carbide | Standard | Type N | 6 | 45° | h6 DIN 6535 HA

HOLEX Solid carbide milling cutters / HOLEX Pro Steel solid carbide HPC finishing cutters

For **finishing operations**. Special geometry for optimum chip evacuation.
For **profile milling as a finishing operation.**
Very sturdy version with strengthened core.

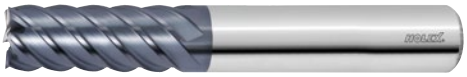
Application:

20 3620 – Very suitable for large depths of cut.

h10 | a_e 0.1×D | 90°

20 3617

h10 | a_e 0.1×D | 90°



20 3618

0 −0.03 | HPC | a_e 0.1×D | 45°

20 3623

h10 | a_e 0.05×D | 90°

20 3619

0 −0.03 | HPC | a_e 0.05×D | 45°

20 3624

h10 | a_e 0.05×D | 90°

20 3620

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	Graphite GRP CRP	Uni				
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	N					
20 3617/3618				160	140	120	110	100	70	60									●	○	●	●
20 3619/3620				120	110	100	90	80	60	50									●	○	●	●
20 3623				160	140	120	110	100	70					90	70			●	●	○	●	●
20 3624				120	110	100	90	80	60					80	60			●	●	○	●	●

∅ D_c	12X 20 3617	12X 20 3618	12X 20 3623	L_s			L_{tot}				45°	< 900 N f_z
	Solid carbide milling cutter		HOLEX Pro Steel solid carbide finishing cutter									
			HPC	20 3617	20 3618	20 3623	20 3617	20 3618	20 3623		20 3623	
mm	TiAlN	TiAlN	TiAlN	mm	mm	mm	mm	mm	mm	mm	mm	mm
3	XXX	–	–	6	–	–	54	–	–	6	–	0.016
4	XXX	–	XXX	8	–	16	54	–	62	6	0.04	0.032
5	XXX	XXX	XXX	9	13	17	54	57	62	6	0.05	0.032
6	XXX	XXX	XXX	10	13	18	54	57	62	6	0.06	0.054
8	XXX	XXX	XXX	12	19	24	58	63	68	8	0.08	0.063
10	XXX	XXX	XXX	14	22	30	66	72	80	10	0.1	0.072
12	XXX	XXX	XXX	16	26	36	73	83	93	12	0.12	0.08
14	XXX	–	–	18	–	–	75	–	–	14	–	0.085
16	XXX	XXX	XXX	22	32	48	82	92	108	16	0.16	0.089
20	XXX	XXX	XXX	26	38	60	92	104	126	20	0.2	0.107
25	–	XXX	–	–	45	–	–	125	–	25	–	0.107

∅ D_c	12X 20 3619	12X 20 3624	12X 20 3620	L_s			L_{tot}				45°	< 900 N f_z
	Solid carbide milling cutter	HOLEX Pro Steel solid carbide finishing cutter	Solid carbide milling cutter									
		HPC		20 3619	20 3624	20 3620	20 3619	20 3624	20 3620		20 3624	
mm	TiAlN	TiAlN	TiAlN	mm	mm	mm	mm	mm	mm	mm	mm	mm
4	XXX	–	XXX	16	–	18	62	–	65	6	–	0.032
5	XXX	–	XXX	18	–	22	62	–	70	6	–	0.032
6	XXX	XXX	XXX	18	24	26	62	66	70	6	0.06	0.054
8	XXX	XXX	XXX	24	32	36	68	74	90	8	0.08	0.063
10	XXX	XXX	XXX	30	40	46	80	89	100	10	0.1	0.072
12	XXX	XXX	XXX	36	48	56	93	100	110	12	0.12	0.08
16	XXX	XXX	XXX	48	64	66	108	123	130	16	0.16	0.089
20	XXX	XXX	XXX	60	80	76	126	140	140	20	0.2	0.107
25	–	–	XXX	–	–	92	–	–	180	25	–	0.107

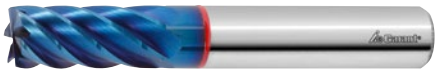
Solid carbide | Type H | e8 | 50° | ≠ | a_e 0.05×D | h6 DIN 6535 HA | HPC | 4 | 6 | 8 | 10

Garant® Solid carbide milling cutter HPC

GARANT Diabolo:
Special geometry, coating and carbide, specially for hard machining.
20 3211 – Dimensions similar to DIN 6527.

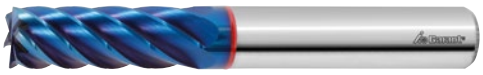
Application: **For profile milling** as **finishing.**
(Plunge cutting only to shallow depths).

DIN 6527 | 90°



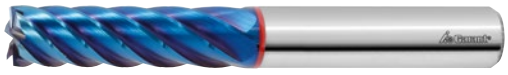
20 3211

Standard | 90°



20 3282

Standard | 90°



20 3372

Standard | 90°

Ground recess

20 3382

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 50 HRC	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	Graphite GRP CRP					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	H	M	M	S	N					
20 3211/3282								170	170	170	145	100									○	●	●
20 3372/3382								120	115	100	90	60									○	●	●

Ø e8 D_C	11X 20 3211	11X 20 3282	No. of teeth Z	L_s		L_{tot}			< 65 HRC f_z
	Diabolo solid carbide milling cutter HPC			20 3211	20 3282	20 3211	20 3282		
mm	TiAlN	TiAlN		mm	mm	mm	mm	mm	mm
2	XXX	–	4	8	–	57	–	6	0.016
3	XXX	–	4	12	–	57	–	6	0.016
4	XXX	–	6	13	–	57	–	6	0.016
5	XXX	–	6	15	–	57	–	6	0.016
6	XXX	XXX	6	16	18	57	65	6	0.016
8	XXX	XXX	6	19	24	63	70	8	0.02
10	XXX	XXX	6	25	30	72	85	10	0.02
12	XXX	XXX	6	28	36	83	93	12	0.025
14	XXX	XXX	6	30	42	83	100	14	0.025
16	XXX	XXX	8	36	48	92	110	16	0.025
18	XXX	XXX	8	36	54	92	114	18	0.03
20	XXX	XXX	10	41	60	104	126	20	0.03

Ø e8 D_C	11X 20 3372	11X 20 3382	No. of teeth Z	L_s		L_4	Ø D_4	L_{tot}			< 65 HRC f_z
	Diabolo solid carbide milling cutter HPC			20 3372	20 3382	20 3382	20 3382	20 3372	20 3382		
mm	TiAlN	TiAlN		mm	mm	mm	mm	mm	mm	mm	mm
6	–	XXX	6	–	16	40	5.8	–	80	6	0.014
8	–	XXX	6	–	19	50	7.7	–	100	8	0.016
10	–	XXX	6	–	25	60	9.7	–	100	10	0.018
12	XXX	XXX	6	45	30	60	11.6	100	120	12	0.021
16	XXX	XXX	8	65	40	100	15.6	125	150	16	0.025
20	XXX	XXX	10	75	50	100	19.6	135	150	20	0.03
25	XXX	–	10	75	–	–	–	150	–	25	0.036

Solid carbide | Type H | 6 | 45° | a_e 0.05×D | h6 DIN 6535 HA | 0 −0.01 | 0 −0.02

HOLEX Solid carbide milling cutter

Strengthened core and geometry for hard machining, without dynamic helical pitch.
20 3246 Size 5 – Tolerance: Size nominal Ø D_c **0/-0.01 mm.**
Size 6–20 – Tolerance: Size nominal Ø D_c **0/-0.02 mm.**

Application: **For profile milling as finishing.**
(Plunge cutting only to shallow depths).

DIN 6527 | 90°

20 3246

Standard | 90°

20 3248

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 50 HRC	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	Graphite GRP CRP					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	H	M	M	S	N					
20 3246/3248						160	95	85	75	65	50	30									○	●	●

Ø D_c	12X 20 3246	12X 20 3248	L_s		L_{tot}			< 55 HRC f_z	
	Solid carbide milling cutter								
			20 3246	20 3248	20 3246	20 3248			
mm	TiAlN	TiAlN	mm	mm	mm	mm	mm	mm	
5	XXX	–	13	–	57	–	6	0.016	
6	XXX	XXX	13	18	57	62	6	0.023	
8	XXX	XXX	19	24	63	68	8	0.03	
10	XXX	XXX	22	30	72	80	10	0.038	
12	XXX	XXX	26	36	83	93	12	0.045	
14	XXX	XXX	26	42	83	99	14	0.045	
16	XXX	XXX	32	48	92	108	16	0.05	
20	XXX	XXX	38	60	104	126	20	0.055	

Solid carbide | Standard | Type H | 45° | h6 DIN 6535 HA | HPC | 0 −0.02 | 0 −0.03 | 4 | 6

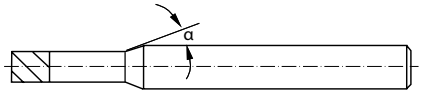
Garant Solid carbide milling cutter HPC, HPC/TPC

GARANT Diabolo 70:
Special solid carbide substrate with extremely high tensile strength combined with **outstanding wear resistance** for optimum process reliability. Newly developed **nano-crystalline high-tech coating for hard milling up to 70 HRC.** Very suitable for **continuous use** in tool and mould making.
Sizes 2 – 5: **Recess angle α = 15°.**

a_e 0.05×D | 90°

20 3212

Tolerance:
- Size nominal Ø: **D_c ≤ size 12: 0 / −0.02 mm;**
- Size nominal Ø: **D_c from size 16: 0 / -0.03 mm.**



Size 2-5

Application: Due to the **special hard geometry** ideal for use on hardened materials from 60 HRC to 70 HRC.
For profile milling as **finishing.**
(Plunge cutting only to shallow depths.)

Note: For materials > 65 HRC: a_e = 0.02×D.

TPC $a_{e\,max}$ 0.02×D | TPC | 90°

20 3373

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	Graphite GRP CRP	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	N						
20 3212										145	**100**	**80**	**75**								○	●	●
20 3373										90	**60**	**50**	**45**								○	●	●

Ø D_c	11X 20 3212	11X 20 3373	No. of teeth Z	L_s		L_{tot}			< 70 HRC f_z	
	Solid carbide milling cutter									
	HPC	HPC / TPC		20 3212	20 3373	20 3212	20 3373		20 3212	20 3373
mm	TiAlN	TiAlN		mm	mm	mm	mm	mm	mm	mm
2	XXX	–	4	6	–	58	–	6	0.018	–
3	XXX	–	6	8	–	58	–	6	0.018	–
4	XXX	–	6	11	–	58	–	6	0.018	–
5	XXX	–	6	13	–	58	–	6	0.018	–
6	XXX	–	6	13	–	58	–	6	0.02	–
8	XXX	–	6	19	–	64	–	8	0.025	–
10	XXX	–	6	22	–	73	–	10	0.025	–
12	XXX	XXX	6	26	56	74	110	12	0.035	0.136
16	XXX	XXX	6	32	66	93	130	16	0.04	0.15
20	XXX	–	6	38	–	105	–	20	0.045	–

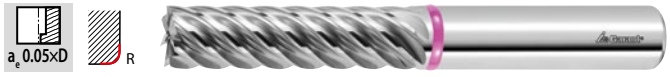
Solid carbide | Standard | Type N | e8 | 7 | 40° | ≠ | h6 DIN 6535 HA | HPC

GARANT Master Titan solid carbide HPC finishing cutter

For **finishing operations**.
Special geometry for optimum chip evacuation.
Unequal spacing gives high **intrinsic stability and smooth cutting action**.
For **profile milling as a finishing operation** in **titanium and titanium alloys.**
Advantage: Suitable for medical technology and approved for foodstuffs.

20 3632

20 3633



20 3634

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	Graphite GRP CRP	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	N						
20 3632–20 3634	130	100	85													60				●			

∅ e8 D_c	11Z 20 3632	11Z 20 3633	L_s		L_{tot}			R	Ti > 850 N f_z
	GARANT Master Titan solid carbide finishing cutter								
mm	HPC		20 3632 mm	20 3633 mm	20 3632 mm	20 3633 mm	mm	mm	mm
4	XXX	XXX	11	16	57	62	6	0.05	0.03
6	XXX	XXX	13	18	57	62	6	0.05	0.032
8	XXX	XXX	19	24	63	68	8	0.05	0.035
10	XXX	XXX	22	30	72	80	10	0.05	0.038
12	XXX	XXX	26	36	83	93	12	0.05	0.04
16	XXX	XXX	32	48	92	108	16	0.1	0.042
20	XXX	XXX	41	60	104	126	20	0.1	0.045

∅ e8 D_c	11Z 20 3634	L_s	L_{tot}		R	Ti > 850 N f_z
	GARANT Master Titan solid carbide finishing cutter					
mm	HPC	mm	mm	mm	mm	mm
6	XXX	24	66	6	0.05	0.024
8	XXX	32	74	8	0.05	0.026
10	XXX	40	89	10	0.05	0.028
12	XXX	48	100	12	0.05	0.03
16	XXX	64	123	16	0.1	0.032
20	XXX	80	140	20	0.1	0.034

Solid carbide | DIN 6527 | Type N | e8 | 45° | a_e 0.1×D

6 | 8

Garant Solid carbide milling cutter

High stability and **extremely smooth cutting action** due to at least 6 teeth.
Double relief ground clearance angle.
Application: **For peripheral milling** as a **finishing operation.**

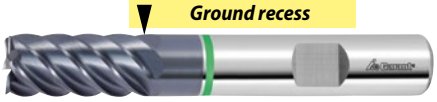
h6 DIN 6535 HA | 45°

Ground recess

20 3440

h6 DIN 6535 HB | 45°

Ground recess



20 3480

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	Uni				
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	K					
20 3440/3480		600	400	190	170	160	95	85	65					90	75	60	120	●		●	○	○	○

Ø e8 D_c	11X 20 3440	11X 20 3480	No. of teeth Z	L_3	L_4	Ø D_4	L_{tot}		45°	< 900 N f_z
	Solid carbide milling cutter									
	DIN 6535 HA	DIN 6535 HB								
mm	TiAlN	TiAlN		mm	mm	mm	mm	mm	mm	mm
5	XXX	XXX	6	13	18	4.8	57	6	0.05	0.032
6	XXX	XXX	6	13	18	5.8	57	6	0.05	0.054
7	XXX	XXX	6	16	26	6.8	63	8	0.05	0.054
8	XXX	XXX	6	19	24	7.8	63	8	0.05	0.063
9	XXX	XXX	6	19	29	8.8	72	10	0.05	0.063
10	XXX	XXX	6	22	32	9.8	72	10	0.05	0.072
12	XXX	XXX	6	26	36	11.8	83	12	0.05	0.08
14	XXX	XXX	6	26	36	13.8	83	14	0.05	0.08
16	XXX	XXX	6	32	42	15.8	92	16	0.05	0.089
18	–	XXX	8	32	42	17.8	92	18	0.05	0.089
20	XXX	XXX	8	38	48	19.8	104	20	0.05	0.107

Solid carbide | Standard | Type N | f8 | 45° | ≠ | ≠ | 90° | a_e 0.05×D | h6 DIN 6535 HA | G 2.5 n_{max}

6 | 8

Garant Solid carbide high precision milling cutter

High stability and **extremely smooth cutting action** due to at least 6 teeth.
Eccentric relief ground.
With maximum 0.003 mm tapering.
Extremely **high taper accuracy with tolerances in the µm range,** for **precise 90° angles** and plane-parallel surfaces in profile milling.
For the most demanding angular accuracy.
Cutter corner chamfer undefined due to eccentric relief grinding.
Application: **For peripheral milling** as a **finishing operation.**

45°

Ground recess

20 3530

45°

20 3540

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	Uni				
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	K					
20 3530				250	200	175	145	120	50					100	80		220	●		●	○	○	○
20 3540				200	160	140	115	100	40					80	65		175	●		●	○	○	○

Ø f8 D_c	11X 20 3530	11X 20 3540	No. of teeth Z		L_3		L_4	Ø D_4	L_{tot}			< 900 N f_z
	Solid carbide high precision milling cutter											
			20 3530	20 3540	20 3530	20 3540	20 3530	20 3530	20 3530	20 3540		
mm	TiAlN	TiAlN			mm	mm	mm	mm	mm	mm	mm	mm
6	XXX	XXX	6	6	13	33	19	5.6	57	80	6	0.04
8	XXX	XXX	6	6	19	40	25	7.6	63	100	8	0.04
10	XXX	XXX	6	6	22	55	30	9.6	72	100	10	0.06
12	XXX	XXX	6	6	26	65	36	11.5	83	120	12	0.06
16	XXX	XXX	6	8	32	85	42	15	92	150	16	0.08
20	XXX	XXX	6	8	38	100	52	19	104	160	20	0.1
25	–	XXX	–	8	–	105	–	–	–	165	25	0.12

Solid carbide | Standard | Type N | f8 | 7 | 45° | ≠ | h6 DIN 6535 HA | G 2.5 n_{max} | HPC

GARANT Master Steel HPC solid carbide finishing cutter

For **finishing operations**.
Special geometry for optimum chip evacuation.
Unequal spacing gives high **intrinsic stability and smooth cutting action**.
For **profile milling as a finishing operation**.

20 4016–4019 – Particularly long cutting edges for efficient finishing.

Note: Can be reground from Ø D_C = 6 mm.
20 4012–4015 – $a_{e\,max}$ = 0.1×D
20 4016–4019 – $a_{e\,max}$ = 0.05×D

20 4012

20 4014

20 4015

20 4016

20 4018

20 4019

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	Graphite GRP CRP					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	K	N					
20 4012–20 4015				360	340	300	290	200						130	120		300		○	○	○	●	
20 4016–20 4019				240	220	200	180	150						90	80		200		○	○	○	●	

Ø f8 D_C	11x 20 4012	11x 20 4014	11x 20 4015	L_s		L_{tot}			45°	< 900 N f_z
	GARANT Master Steel solid carbide finishing cutter			20 4012	20 4014 20 4015	20 4012	20 4014 20 4015		20 4012 20 4014	
	HPC									
mm	TiAlN	TiAlN	TiAlN	mm	mm	mm	mm	mm	mm	mm
4	XXX	XXX	XXX	11	16	57	62	6	0.04	0.02
5	XXX	XXX	XXX	13	17	57	62	6	0.05	0.028
6	XXX	XXX	XXX	13	18	57	62	6	0.06	0.035
8	XXX	XXX	XXX	19	24	63	68	8	0.08	0.058
10	XXX	XXX	XXX	22	30	72	80	10	0.1	0.081
12	XXX	XXX	XXX	26	36	83	93	12	0.12	0.1
14	XXX	XXX	XXX	26	42	83	99	14	0.14	0.11
16	XXX	XXX	XXX	32	48	92	108	16	0.16	0.117
20	XXX	XXX	XXX	41	60	104	126	20	0.2	0.13

Ø f8 D_C	11x 20 4016	11x 20 4018	11x 20 4019	L_s		L_{tot}			45°	< 900 N f_z
	GARANT Master Steel solid carbide finishing cutter			20 4016	20 4018 20 4019	20 4016	20 4018 20 4019		20 4016 20 4018	
	HPC									
mm	TiAlN	TiAlN	TiAlN	mm	mm	mm	mm	mm	mm	mm
6	XXX	–	–	24	–	66	–	6	0.06	0.025
8	XXX	XXX	XXX	32	40	74	81	8	0.08	0.043
10	XXX	XXX	XXX	40	50	89	96	10	0.1	0.065
12	XXX	XXX	XXX	48	60	100	112	12	0.12	0.08
14	XXX	XXX	XXX	56	70	108	122	14	0.14	0.098
16	XXX	XXX	XXX	64	80	123	136	16	0.16	0.105
20	XXX	XXX	XXX	80	100	140	160	20	0.2	0.122

Solid carbide | WR | e8 | a_e 0.5×D | h6 DIN 6535 HA | HPC | 3 | 4

GARANT Master Alu SlotMachine HPC solid carbide roughing end mill / HPC solid carbide roughing end mill

For roughing.
Special profile for machining non-ferrous metals.

20 5255 – Improved chip evacuation due to central through-coolant. Due to the patented geometry also suitable for boring.

Advantage:

20 5250/5255/5265 – **Optimised flute form, eccentric relief ground, generous chip spaces.**
Up to 2 × D into solid material at very high feed rates and smooth cutting action.
Ramping capability up to 45°.
Very high feed rates when plunging vertically, thanks to **special plunging geometry**.

DIN 6527 | 35° | G 2.5 | n_{max} | R — **Ground recess** — 20 5250

DIN 6527 | 35° | G 2.5 | n_{max} | R — **Ground recess** — 20 5255

DIN 6527 | 45° | R — **Ground recess** — 20 5260

Standard | 35° | G 2.5 | n_{max} | R — **Ground recess** — 20 5265

Standard | 45° | R — **Ground recess** — 20 5270

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Cu	CuZn					
ISO code	N	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	N	N					
20 5250/5265		450	400	380													160	200	●	○	○	●	
20 5255		450	400	380													160	200	●			●	
20 5260/5270		300	280	200													80	100	●	○	○	○	

∅ e8 D_c	11X 20 5250	11X 20 5255	12X 20 5260	No. of teeth Z		L_s	L_4	∅ D_4	L_{tot}		R	Alu f_z	Alu f_z
	GARANT Master Alu SlotMachine solid carbide roughing end mill	GARANT Master Alu SlotMachine solid carbide roughing end mill with through-coolant	Solid carbide roughing end mill										
	HPC			20 5250 20 5255	20 5260								
mm	DLC	DLC				mm	mm	mm	mm	mm	mm	mm	mm
4	XXX	XXX	XXX	3	3	8	–	–	57	6	0.1	0.04	0.06
5	XXX	XXX	XXX	3	3	9	–	–	57	6	0.2	0.06	0.08
6	XXX	XXX	XXX	3	3	13	19	5.5	57	6	0.2	0.08	0.1
8	XXX	XXX	XXX	3	3	19	25	7.5	63	8	0.2	0.1	0.12
10	XXX	XXX	XXX	3	3	22	30	9.5	72	10	0.32	0.12	0.14
12	XXX	XXX	XXX	3	3	26	36	11	83	12	0.32	0.15	0.18
14	XXX	XXX	XXX	4	3	26	36	13	83	14	0.32	0.18	0.2
16	XXX	XXX	XXX	4	3	31	42	15	92	16	0.32	0.2	0.22
18	XXX	XXX	XXX	4	3	31	42	17	92	18	0.32	0.22	0.25
20	XXX	XXX	XXX	4	3	41	52	19	104	20	0.5	0.25	0.28

∅ d8 D_c	11X 20 5265	12X 20 5270	No. of teeth Z		L_s	L_4	∅ D_4	L_{tot}		R	Alu f_z	Alu f_z
	GARANT Master Alu SlotMachine solid carbide roughing end mill	Solid carbide roughing end mill										
	HPC		20 5265	20 5270								
mm	DLC				mm	mm	mm	mm	mm	mm	mm	mm
6	XXX	XXX	3	3	18	24	5.5	62	6	0.2	0.08	0.1
8	XXX	XXX	3	3	24	30	7.5	68	8	0.2	0.1	0.12
10	XXX	XXX	3	3	30	38	9.5	80	10	0.32	0.12	0.14
12	XXX	XXX	3	3	36	46	11	93	12	0.32	0.15	0.18
14	XXX	XXX	4	3	42	52	13	99	14	0.32	0.18	0.2
16	XXX	XXX	4	3	48	58	15	108	16	0.32	0.2	0.22
18	XXX	XXX	4	3	54	67	17	117	18	0.32	0.22	0.25
20	XXX	XXX	4	3	60	74	19	126	20	0.5	0.25	0.28

Solid carbide | Standard | WR | d11 | 3 | 30° | a_e 0.5×D

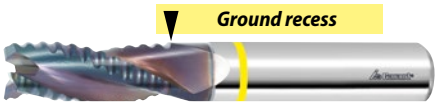
Garant Solid carbide roughing slot drill

Dimensions similar to DIN 6527.
Knuckle form profile.
Special profile for machining non-ferrous metals.
20 5331 – With the latest generation of **DLC coating sp²**.

h6 DIN 6535 HB, 45°

20 5330

h6 DIN 6535 HA, 45°



20 5331

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Cu	CuZn					
ISO code	N	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	N	N					
20 5330		270	250	180													80	100	●	○	○	○	
20 5331		400	320	260													150	180	●	○	○	○	

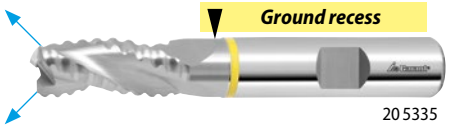
Ø d11 D_C	11X 20 5330	11X 20 5331	L_s	L_4	Ø D_4	L_{tot}		45°	Alu f_z	Alu f_z
	Solid carbide roughing slot drill									
		DLC								
mm			mm	mm	mm	mm	mm	mm	mm	mm
4	XXX	XXX	11	20	3.8	57	6	0.35	0.035	0.045
5	XXX	XXX	13	20.5	4.8	57	6	0.35	0.035	0.08
6	XXX	XXX	13	21	5.8	57	6	0.35	0.06	0.08
8	XXX	XXX	16	27	7.8	63	8	0.45	0.06	0.08
10	XXX	XXX	22	32	9.8	72	10	0.55	0.07	0.09
12	XXX	XXX	26	38	11.8	83	12	0.65	0.07	0.09
16	XXX	XXX	32	44	15.8	92	16	0.85	0.09	0.11
20	XXX	XXX	38	54	19.8	104	20	1.05	0.12	0.14

Solid carbide | Standard | WR | d11 | 3 | 30° | a_e 0.5×D

Garant Solid carbide roughing slot drill with internal coolant supply

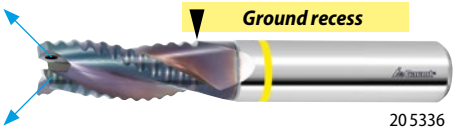
Dimensions similar to DIN 6527.
Knuckle form profile.
Special profile for machining non-ferrous metals.
With through-coolant.
20 5336 – With the latest generation of **DLC coating sp²**.

h6 DIN 6535 HB, 45°



20 5335

h6 DIN 6535 HA, 45°



20 5336

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Cu	CuZn					
ISO code	N	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	N	N					
20 5335		270	250	180													80	100	●			○	
20 5336		400	320	260													150	180	●			○	

Ø d11 D_C	11X 20 5335	11X 20 5336	L_s	L_4	Ø D_4	L_{tot}		45°	Alu f_z	Alu f_z
	Solid carbide roughing slot drill with internal coolant supply									
		DLC								
mm			mm	mm	mm	mm	mm	mm	mm	mm
6	XXX	XXX	13	21	5.8	57	6	0.35	0.06	0.08
8	XXX	XXX	16	27	7.8	63	8	0.45	0.06	0.08
10	XXX	XXX	22	32	9.8	72	10	0.55	0.07	0.09
12	XXX	XXX	26	38	11.8	83	12	0.65	0.07	0.09
16	XXX	XXX	32	44	15.8	92	16	0.85	0.09	0.11
20	XXX	XXX	38	54	19.8	104	20	1.05	0.12	0.14

Solid carbide | DIN 6527 | NR | d11 | 40° | a_e 0.5×D | h6 DIN 6535 HB | HPC | 4 | 5

GARANT Master INOX M SlotMachine solid carbide roughing end mill

With a **new-type knurled profile**, optimised for higher feed rates in INOX.
Improved cutting edge protection thanks to slight edge honing.
Tremendous bending strength due to the use of **ultra-fine grain substrate**.
Number of teeth tailored to performance and process reliability.

Advantage: The tool geometry produces particularly tightly rolled swarf that is discharged via flat chip breaker recesses.
As a result, the tool maintains an **extremely stable core.**

Application: For roughing machining, particularly suitable for full-slot machining.

20 5448

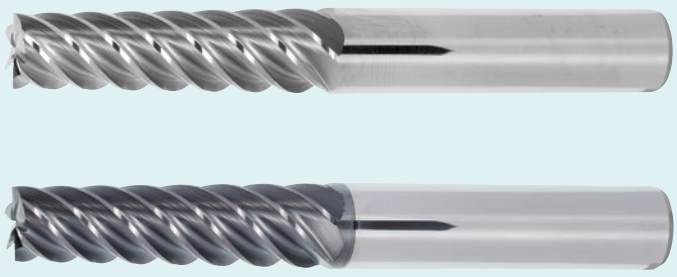
20 5450

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	Graphite GRP CRP	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	N						
20 5448/5450				150	**140**	**120**	110	100						**90**	**80**			○		●	○		○

∅ d11 D_c	11X 20 5448	11X 20 5450	No. of teeth Z	L_s		L_4	∅ D_4	L_{tot}			45°	INOX > 900 N f_z	INOX > 900 N f_z
	GARANT Master INOX M SlotMachine solid carbide roughing end mill HPC			20 5448	20 5450	20 5450	20 5450	20 5448	20 5450				
mm	TiAlN	TiAlN		mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
4	XXX	XXX	4	8	11	19	3.7	54	57	6	0.15	0.01	0.015
5	XXX	XXX	4	9	13	19	4.6	54	57	6	0.15	0.15	0.02
6	XXX	XXX	4	10	13	19	5.6	54	57	6	0.15	0.02	0.025
8	XXX	XXX	4	12	19	25	7.4	58	63	8	0.2	0.03	0.035
10	XXX	XXX	5	14	22	30	9.3	66	72	10	0.2	0.035	0.04
12	XXX	XXX	5	16	26	36	11.1	73	83	12	0.25	0.04	0.05
16	XXX	XXX	5	22	32	42	14.8	82	92	16	0.35	0.05	0.06
20	XXX	XXX	5	26	38	52	18.5	92	104	20	0.4	0.06	0.07

Do you need a tapered die-sinking cutter for your production?

Ask the employees / technical advisers of the Hoffmann Group!
We will be happy to prepare our quotation for you.



Solid carbide | DIN 6527 | HR | d11 | a_e 0.5×D | h6 DIN 6535 HB | HPC

3 4 5

Solid carbide roughing end mill HPC

Dimensions similar to DIN 6527.
For high feed rates, very high metal removal rate.

20 5486 – With 20° helix.
20 5492 – Without dynamic twist pitch.
Size **16M MID mills: Dimensions to manufacturer's standard.**
20 5482/5490 – **With special knuckle profile.**

20 5482

20 5486

20 5490

20 5492

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	K						
20 5482/5490		280	200	120	105	100	70	60	35					60	50		90	●		●	○	○	○
20 5486/5492		270	190	115	100	95	65	55						55			85	○		●	○	○	○

Ø d11 D_c | 11X 20 5482 Garant | 12X 20 5486 HOLEX

Solid carbide roughing end mill, stub

HPC

mm	TiAlN	TiAlN	No. of teeth Z		L_s		L_4	Ø D_4	L_{tot}		45°		< 900 N f_z	< 900 N f_z
			20 5482	20 5486	20 5482 mm	20 5486 mm	20 5482 mm	20 5482 mm	mm	mm	20 5482 mm	20 5486 mm	mm	mm
5	XXX	XXX	3	3	8	10	–	–	54	6	0.3	0.4	0.02	0.023
6	XXX	XXX	3	4	8	10	18	5.5	54	6	0.3	0.4	0.03	0.033
7	XXX	–	3	–	11	–	–	–	58	8	0.3	–	0.03	0.033
8	XXX	XXX	3	4	11	12	22	7.5	58	8	0.3	0.4	0.04	0.045
9	XXX	–	4	–	13	–	–	–	66	10	0.5	–	0.04	0.045
10	XXX	XXX	4	4	13	14	26	9.5	66	10	0.5	0.5	0.05	0.06
12	XXX	XXX	4	4	16	16	28	11	73	12	0.5	0.5	0.06	0.08
14	XXX	–	4	–	16	–	31	13	76	14	0.5	–	0.06	0.08
16	XXX	XXX	4	4	19	22	34	15	82	16	0.5	0.7	0.08	0.1
18	XXX	–	4	–	19	–	36	17	84	18	0.5	–	0.08	0.1
20	XXX	XXX	4	4	20	26	42	19	92	20	0.5	0.7	0.1	0.12

Ø d11 D_c | 11X 20 5490 Garant | 12X 20 5492 HOLEX

Solid carbide roughing end mill

HPC

mm	TiAlN	TiAlN	No. of teeth Z		L_s	L_4	Ø D_4	L_{tot}		45°	< 900 N f_z	< 900 N f_z
			20 5490	20 5492	mm	20 5490 mm	20 5490 mm	mm	mm	mm	mm	mm
4	XXX	XXX	3	3	8	–	–	57	6	0.3	0.02	0.023
5	XXX	XXX	3	3	13	–	–	57	6	0.3	0.02	0.023
6	XXX	XXX	3	4	13	21	5.5	57	6	0.3	0.03	0.033
7	XXX	–	3	–	16	–	–	63	8	0.3	0.03	0.033
8	XXX	XXX	3	4	16	26	7.5	63	8	0.3	0.04	0.045
9	XXX	–	4	–	19	–	–	72	10	0.5	0.04	0.045
10	XXX	XXX	4	4	22	32	9.5	72	10	0.5	0.05	0.06
11	XXX	–	4	–	26	–	–	83	12	0.5	0.05	0.06
12	XXX	XXX	4	4	26	38	11	83	12	0.5	0.06	0.08
13	XXX	–	4	–	26	–	–	83	14	0.5	0.06	0.08
14	XXX	XXX	4	4	26	38	13	83	14	0.5	0.06	0.08
16	XXX	XXX	4	4	32	44	15	92	16	0.5	0.08	0.1
16M	–	XXX	–	4	48	–	–	110	16	0.5	0.08	0.1
18	XXX	–	4	–	32	44	17	92	18	0.5	0.08	0.1
20	XXX	XXX	4	4	38	54	19	104	20	0.5	0.1	0.12
25	XXX	XXX	5	5	45	65	24	121	25	0.5	0.12	0.14

Solid carbide | DIN 6527 | HR | d11 | 20° | h6 DIN 6535 HB | HPC | 3 | 4

Garant Solid carbide roughing end mill HPC with internal coolant supply

With internal coolant supply.
The coolant is fed directly **to the cutting** edges.
This gives **longer tool-life** and **complete swarf evacuation.**
This is especially **important when milling slots or pockets**.

20 5488

20 5592

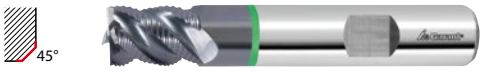
Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	K						
20 5488/5592		280	200	120	105	100	70	60	35					60	50		90	●		●			●

Ø d11 D_c	11X 20 5488	11X 20 5592	No. of teeth Z	L_s		L_{tot}			45°	< 900 N f_z	< 900 N f_z
	Solid carbide roughing end mill with internal coolant supply			20 5488	20 5592	20 5488	20 5592				
	HPC										
mm	TiAlN	TiAlN		mm	mm	mm	mm	mm	mm	mm	mm
8	XXX	XXX	3	11	16	58	63	8	0.3	0.04	0.045
10	XXX	XXX	4	13	22	66	72	10	0.5	0.05	0.06
12	XXX	XXX	4	16	26	73	83	12	0.5	0.06	0.08
16	XXX	XXX	4	19	32	82	92	16	0.5	0.08	0.1
20	XXX	XXX	4	20	38	92	104	20	0.5	0.1	0.12

Solid carbide | DIN 6527 | HR | d11 | 45° | a_e 0.5×D | h6 DIN 6535 HB | MTC | 4 | 5

Garant Solid carbide roughing end mill MTC

Dimensions similar to DIN 6527.
Optimised special knuckle profile for roughing.
Very **high rate of metal removal.**
Can be used as a **universal end mill.**
Application: Especially for **MTC (Multi Task Cutting)** use on the new generation of turning / milling centres.



20 5710

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	K						
20 5710					170	170	140	120						60	50	40	120	●		●	○	○	○

Ø d11 D_c	11X 20 5710	No. of teeth Z	L_s	L_{tot}		45°	< 900 N f_z	< 900 N f_z
	Solid carbide roughing end mill							
	MTC							
mm	TiAlN		mm	mm	mm	mm	mm	mm
6	XXX	4	8	54	6	0.15	0.028	0.03
8	XXX	4	11	58	8	0.2	0.04	0.05
10	XXX	4	13	66	10	0.2	0.05	0.06
12	XXX	4	16	73	12	0.25	0.06	0.07
14	XXX	4	16	75	14	0.3	0.08	0.09
16	XXX	5	19	83	16	0.35	0.08	0.09
18	XXX	5	19	80	18	0.35	0.1	0.12
20	XXX	5	20	93	20	0.4	0.1	0.12

Solid carbide | DIN 6527 | NR | d11 | 5 | 42° | ≠ | a_e 0.5×D | h6 DIN 6535 HB | HPC

Garant

GARANT Master Steel SlotMachine HPC solid carbide roughing end mill

With a new knurled profile, optimised for higher feed rates.
Feed rate per tooth up to 0.1 mm up to a depth of 2×D (in the slot milled from solid).
Improved cutting edge protection thanks to slight edge honing.
Tremendous bending strength due to the use of ultra-fine grain substrate.

20 5551 – With **internal coolant supply** for reliable swarf evacuation.

Advantage: The tool geometry produces particularly tightly rolled swarf that is discharged via flat chip breaker recesses.
As a result, the tool maintains an extremely stable core.
Plunge angle of up to 10° possible thanks to generous ecess on the front face.

Application: For roughing machining, particularly suitable for full-slot machining.

20 5548

20 5550

20 5551

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	K						
20 5548/5550				200	180	160	140	110						50	35		200	●		●	○	●	●
20 5551				200	180	160	140	110						50	35		200	●		●			●

∅ d11 D_c	11X 20 5548 GARANT Master Steel SlotMachine solid carbide roughing end mill HPC TiAlN	L_s	L_{tot}		45°	< 900 N f_z	< 900 N f_z
mm		mm	mm	mm	mm	mm	mm
4	XXX	8	54	6	0.2	0.02	0.03
5	XXX	9	54	6	0.25	0.02	0.03
6	XXX	10	54	6	0.3	0.035	0.045
7	XXX	11	58	8	0.35	0.035	0.045
8	XXX	12	58	8	0.4	0.045	0.06
9	XXX	13	66	10	0.45	0.045	0.06
10	XXX	14	66	10	0.5	0.065	0.09
12	XXX	16	73	12	0.6	0.065	0.09
14	XXX	18	75	14	0.7	0.07	0.1
16	XXX	22	82	16	0.8	0.07	0.1
20	XXX	26	92	20	1	0.09	0.13

∅ d11 D_c	11X 20 5550 GARANT Master Steel SlotMachine solid carbide roughing end mill HPC TiAlN	11X 20 5551 GARANT Master Steel SlotMachine solid carbide roughing end mill with through-coolant TiAlN	L_s	L_4	∅ D_4	L_{tot}		45°	< 900 N f_z	< 900 N f_z
mm			mm	mm	mm	mm	mm	mm	mm	mm
4	XXX	XXX	11	19	3.7	57	6	0.2	0.02	0.03
5	XXX	XXX	13	19	4.6	57	6	0.25	0.02	0.03
6	XXX	XXX	13	19	5.6	57	6	0.3	0.035	0.045
7	XXX	–	16	25	6.5	63	8	0.35	0.035	0.045
8	XXX	XXX	19	25	7.4	63	8	0.4	0.045	0.06
9	XXX	–	19	30	8.3	72	10	0.45	0.045	0.06
10	XXX	XXX	22	30	9.3	72	10	0.5	0.065	0.09
12	XXX	XXX	26	36	11.1	83	12	0.6	0.065	0.09
14	XXX	–	26	36	13	83	14	0.7	0.07	0.1
16	XXX	XXX	32	42	14.8	92	16	0.8	0.07	0.1
20	XXX	XXX	38	52	18.5	104	20	1	0.09	0.13

Solid carbide | Standard | NR | d11 | 5 | 42° | h6 DIN 6535 HB | HPC

GARANT Master Steel SlotMachine HPC solid carbide roughing end mill / HPC/TPC solid carbide roughing end mill

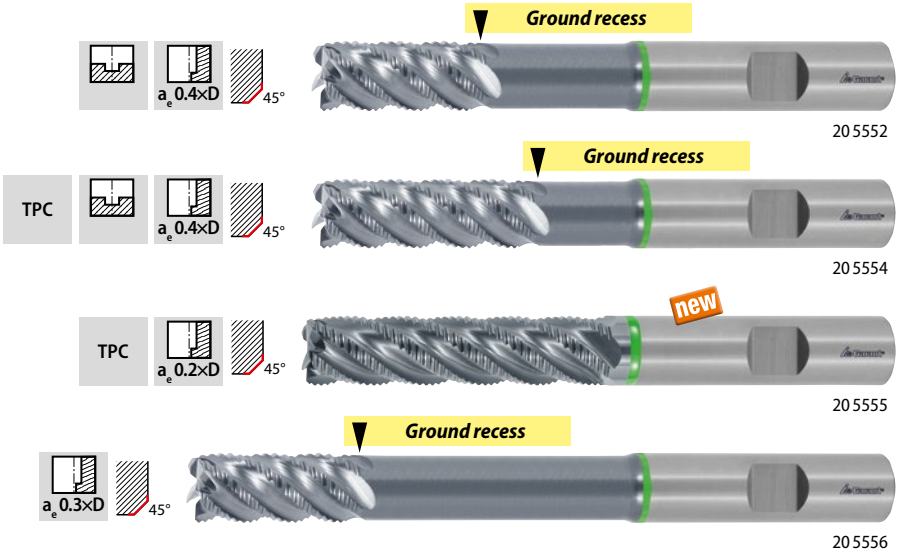
With a new-type knurled profile, optimised for higher feed rates. Improved cutting edge protection thanks to slight edge honing. Tremendous bending strength due to the use of ultra-fine grain substrate.

Advantage: The tool geometry produces particularly tightly rolled swarf that is discharged via flat chip breaker recesses. As a result, the tool maintains an extremely stable core. Plunge angle of up to 10° possible thanks to generous recess on the front face.

Application: For roughing machining.

20 5554/5555 – **Problem-solver for TPC machining.**

Note:
20 5556 – With conically increasing recess to guarantee stability at long overhangs.



Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	Uni				
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	K					
20 5552/5554				200	180	160	140	110						50	35		200	●		●	○	●	●
20 5555/5556				180	170	150	130	100						45	30		180	●		●	○	●	●

Ø d11 D_c	11X 20 5552	11X 20 5554	L_s		L_4		Ø D_4	L_{tot}		45°	< 900 N f_z	< 900 N f_z
	GARANT Master Steel SlotMachine solid carbide roughing end mill											
	HPC TiAlN	HPC / TPC TiAlN	20 5552	20 5554	20 5552	20 5554						
mm			mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
5	XXX	XXX	13	17	24	24	4.6	62	6	0.25	0.03	0.04
6	XXX	XXX	13	18	25	25	5.6	62	6	0.3	0.04	0.05
8	XXX	XXX	21	24	30	30	7.4	68	8	0.4	0.05	0.06
10	XXX	XXX	22	30	38	35	9.3	80	10	0.5	0.06	0.08
12	XXX	XXX	26	36	46	45	11.1	93	12	0.6	0.07	0.09
14	XXX	XXX	26	42	52	50	13	99	14	0.7	0.08	0.1
16	XXX	XXX	36	48	58	55	14.8	108	16	0.8	0.08	0.1
20	XXX	XXX	41	60	74	70	18.5	126	20	1	0.1	0.13

Ø d11 D_c	11X 20 5555	11X 20 5556	L_s		L_4	Ø $D_{4\,min}$	Ø $D_{4\,max}$	L_{tot}		45°	< 900 N f_z
	GARANT Master Steel SlotMachine solid carbide roughing end mill										
	HPC / TPC TiAlN	HPC TiAlN	20 5555	20 5556		20 5556	20 5556	20 5555	20 5556		
mm			mm	mm	mm	mm	mm	mm	mm	mm	mm
6	XXX	XXX	24	13	42	5.4	5.8	66	80	6	0.3	0.04
8	XXX	XXX	32	21	62	7.2	7.8	74	100	8	0.4	0.05
10	XXX	XXX	40	22	58	9	9.7	89	100	10	0.5	0.06
12	XXX	XXX	48	26		10.8	11.6	100	120	12	0.6	0.08
16	XXX	XXX	64	36		14.4	15.5	123	150	16	0.8	0.09
20	XXX	XXX	80	41	98	18	19.4	140	150	20	1	0.09

Solid carbide | DIN 6527 | HR | d11 | h6 DIN 6535 HB | MTC

4 5

Garant Solid carbide roughing end mill MTC

Dimensions similar to DIN 6527.
Optimised special knuckle profile for roughing.
Very **high rate of metal removal.**

20 5711 – With **semi-roughing knuckle profile** and 45° flutes for superalloys.
20 5712 – With **special internal tooth profile** and 50° flutes for reliable chip breaking in **stainless steels.**

Application: Especially for **MTC (Multi Task Cutting)** use on the new generation of turning / milling centres.

Note:
20 5711 – f_z for a_p max = 0.5×D.

20 5712

20 5711

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	Graphite GRP CRP
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	K	N
20 5712				180	170	170	140							100	80			
20 5711				120	105	100	70									50	90	

Ø d11 D_c	11X 20 5712	11X 20 5711	No. of teeth Z	L_s	L_4	Ø D_4	L_{tot}		45°		INOX > 900 N f_z	Ti > 850 N f_z	INOX > 900 N f_z	Ti > 850 N f_z
	Solid carbide roughing end mill								20 5712	20 5711	20 5712	20 5711	20 5712	20 5711
	MTC													
mm	TiAlN	TiAlN		mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
6	XXX	XXX	4	12	21	5.5	58	6	0.15	0.3	0.014	0.015	0.02	0.02
8	XXX	XXX	4	16	26	7.5	64	8	0.2	0.3	0.022	0.02	0.03	0.025
10	XXX	XXX	4	20	32	9.5	73	10	0.2	0.5	0.025	0.025	0.04	0.03
12	XXX	XXX	4	24	38	11.5	84	12	0.25	0.5	0.03	0.035	0.05	0.04
16	XXX	XXX	5	32	44	15.5	93	16	0.35	0.5	0.04	0.045	0.06	0.05
20	XXX	XXX	5	40	54	19.5	104	20	0.4	0.5	0.05	0.055	0.08	0.06
25	–	XXX	5	50	65	24	125	25	–	0.5	–	0.055	–	0.06

Solid carbide | DIN 6527 | HR | d11 | 45° | a_e 0.5×D | h6 DIN 6535 HB | MTC

4 5

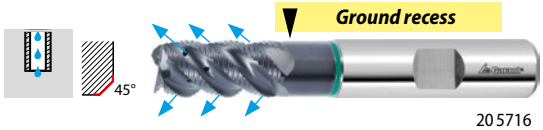
Garant Solid carbide roughing end mill MTC

20 5714 – Dimensions similar to DIN 6527.
Optimised special knuckle profile for roughing.
Very **high rate of metal removal.**

20 5716 – **Optimised special knuckle profile for roughing.**
Very **high rate of metal removal.** Can be used as a **universal end mill**.
Special cooling channel system, to achieve the best possible high performance machining.

Application: Especially for **MTC (Multi Task Cutting)** use on the new generation of turning / milling centres.

20 5714



20 5716

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	Uni
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	K	
20 5714					170	170	140	120						60	45		120	●
20 5716				265	195	195	160	140	35					70	50	45	145	●

Ø d11 D_c	11X 20 5714	11X 20 5716	No. of teeth Z	L_s	L_4	Ø D_4	L_{tot}		45°	< 900 N f_z	< 900 N f_z
	Solid carbide roughing end mill	Solid carbide roughing end mill with internal coolant supply									
	MTC										
mm	TiAlN	TiAlN		mm	mm	mm	mm	mm	mm	mm	mm
6	XXX	XXX	4	12	21	5.5	57	6	0.15	0.028	0.03
8	XXX	XXX	4	16	26	7.5	63	8	0.2	0.04	0.05
10	XXX	XXX	4	20	32	9.5	72	10	0.2	0.05	0.06
12	XXX	XXX	4	24	38	11.5	83	12	0.25	0.06	0.07
14	XXX	–	4	28	42	13.5	83	14	0.25	0.06	0.07
16	XXX	XXX	5	32	44	15.5	92	16	0.35	0.08	0.09
18	XXX	–	5	36	44	17.5	92	18	0.35	0.08	0.09
20	XXX	XXX	5	40	54	19.5	104	20	0.4	0.1	0.12
25	XXX	–	5	50	65	24	125	25	0.5	0.1	0.12

Solid carbide | DIN 6527 | HR | d11 | 45° | a_e 0.5×D | h6 DIN 6535 HB

4 5 6

HOLEX Pro Steel HPC solid carbide roughing end mill / MTC solid carbide roughing end mill

Dimensions similar to DIN 6527.
Optimised special knuckle profile for roughing.
Very **high rate of metal removal.**
Application:

20 5715 – Especially for **MTC (Multi Task Cutting)** use on the new generation of turning / milling centres.

20 5704/5706 – For roughing machining, particularly suitable for full-slot machining.

HPC 45° new

20 5704

Ground recess new

HPC 45°

20 5706

MTC 45°

20 5715

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	Uni
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	K	
20 5704/5706					170	160	135	120						60	45		120	●
20 5715					155	155	125	110						55	40		110	●

Ø d11 D_c	12X 20 5704 HPC TiAlN	12X 20 5706 MTC TiAlN	12X 20 5715 MTC TiAlN	No. of teeth Z	L_3 20 5704	L_3 20 5706 20 5715	L_4 20 5706	Ø D_4 20 5706	L_{tot} 20 5704	L_{tot} 20 5706 20 5715	45° 20 5704 20 5706	45° 20 5715	< 900 N f_z	< 900 N f_z
mm	HOLEX Pro Steel solid carbide roughing end mill		Solid carbide roughing end mill		mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
4	XXX	XXX	–	4	8	11	19	3.7	54	57	0.2	–	0.02	0.028
5	XXX	XXX	–	4	9	13	19	4.6	54	57	0.25	–	0.02	0.028
6	XXX	XXX	XXX	4	10	13	19	5.6	54	57	0.3	0.15	0.028	0.03
8	XXX	XXX	XXX	4	12	19	25	7.4	58	63	0.4	0.2	0.04	0.05
10	XXX	XXX	XXX	4	14	22	30	9.3	66	72	0.5	0.2	0.05	0.06
12	XXX	XXX	XXX	4	16	26	36	11.1	73	83	0.6	0.25	0.06	0.07
16	XXX	XXX	XXX	5	22	32	42	14.8	82	92	0.8	0.35	0.08	0.09
20	XXX	XXX	XXX	6	26	38	52	18.5	92	104	1	0.4	0.1	0.12
25	–	–	XXX	6	–	50	–	–	–	125	–	0.5	0.1	0.12

Solid carbide | Standard | HR | d11 | 45° | a_e 0.1×D | h6 DIN 6535 HB | MTC

4 5

Garant Solid carbide roughing end mill MTC

Dimensions similar to DIN 6527.
Optimised special knuckle profile for roughing.
Very high rate of metal removal.
Can be used as a **universal end mill.**
Application: Especially for **MTC (Multi Task Cutting)** use on the new generation of turning / milling centres.

Ground recess

45°

20 5718

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	TOOLOX® 33 HRC	TOOLOX® 44 HRC	INOX < 900 N	INOX > 900 N	GG(G)	Uni
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	H	M	M	K	
20 5718				120	95	85	80	70					70	60	50	35	70	●

Ø d11 D_c	11X 20 5718 MTC TiAlN	No. of teeth Z	L_3	L_4	Ø D_4	L_{tot}	45°	< 900 N f_z	< 900 N f_z
mm	Solid carbide roughing end mill		mm	mm	mm	mm	mm	mm	mm
6	XXX	4	12	40	5.5	80	0.15	0.022	0.024
8	XXX	4	16	50	7.5	100	0.2	0.03	0.04
10	XXX	4	20	60	9.5	100	0.2	0.04	0.048
12	XXX	4	24	60	11.5	120	0.25	0.05	0.056
16	XXX	5	32	100	15.5	150	0.35	0.065	0.072
20	XXX	5	40	100	19.5	150	0.4	0.08	0.096

Solid carbide | Standard | Type W | 0 −0.005 | 2 | a_e 0.5×D | a_e 0.05×D | h5 DIN 6535 HA

25° ≤ 0.8 mm | 30° ≥ 1 mm

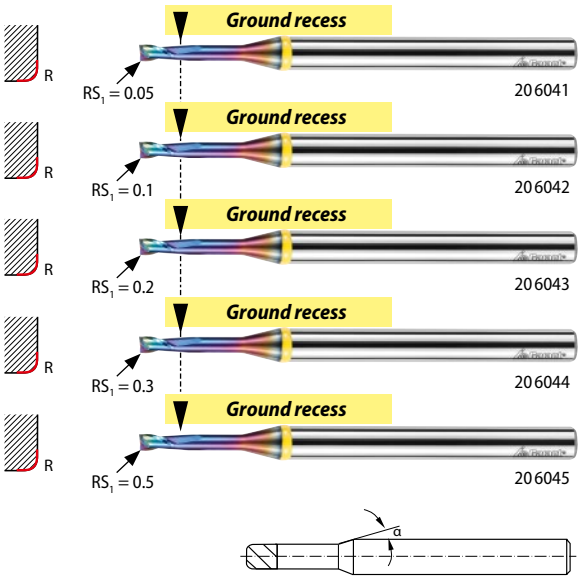
Garant

Solid carbide micro precision torus cutter

With **advanced DLC sp² coating.** For the **highest demands regarding performance and precision in aluminium materials. Extremely tight tolerances** ensure maximum accuracy.
Double-relief ground with 2 chamfers hollow ground.
Recess angle α = 16°.
Tolerances:

- Corner radius: **RS_1 = ±0.0025 mm**
- Neck ∅: **D_4 = 0 / -0.01 mm.**

Note: At greater tool overhang lengths, use a reduced value for a_p!
Values for:
slots milled from solid: $a_p = 0.25 \times D \times a_{p\,korr}$
side milling: $a_p = 0.50 \times D \times a_{p\,korr}$
copying: $a_p = 0.25 \times D \times a_{p\,korr}$
To calculate the feed rate vf please use the actual speed of the machine (the maximum possible speed)!
e.g: vf = 18000 [rpm]× fz [mm/Z]× z



Suitable for/ v_c [m/min]	Alu	Alu	Alu cast > 10 % Si	PMMA acrylic	PE-HD	PA 66	PEEK	PF 31	AFRP aramid	PVDF GF20	POM GF25	PA 66 GF30	PEEK GF30	PTFE CF25	PEEK CF30	Hybrid	Cu	CuZn					
ISO code	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N					
20 6041–20 6045	480	400	400	200	160	200	150	130		180	160	150	130	160			160	200		●	●		●

∅D_c×L_4	20 6041	20 6042	20 6043	20 6044	20 6045	L_s	L_4	∅ D_4	L_{tot}		Alu cast > 10 % Si f_z	Alu cast > 10 % Si f_z	Correction factor $a_{p\,korr}$
	Solid carbide torus cutter												
	RS_1 0.05	RS_1 0.1	RS_1 0.2	RS_1 0.3	RS_1 0.5								
mm	DLC	DLC	DLC	DLC	DLC	mm	mm	mm	mm	mm	mm	mm	
0,2×0,5	XXX	–	–	–	–	0.2	0.5	0.18	50	4	0.012	0.012	1
0,2×1	XXX	–	–	–	–	0.2	1	0.18	50	4	0.012	0.012	1
0,2×2	XXX	–	–	–	–	0.2	2	0.18	50	4	0.007	0.007	0.5
0,2×3	XXX	–	–	–	–	0.2	3	0.18	50	4	0.007	0.007	0.2
0,3×1	XXX	–	–	–	–	0.3	1	0.28	50	4	0.016	0.016	1
0,3×2	XXX	–	–	–	–	0.3	2	0.28	50	4	0.016	0.016	0.9
0,3×3	XXX	–	–	–	–	0.3	3	0.28	50	4	0.012	0.012	0.5
0,3×4	XXX	–	–	–	–	0.3	4	0.28	50	4	0.012	0.012	0.35
0,3×6	XXX	–	–	–	–	0.3	6	0.28	50	4	0.007	0.007	0.08
0,4×1	XXX	XXX	–	–	–	0.4	1	0.38	50	4	0.016	0.016	1
0,4×2	XXX	XXX	–	–	–	0.4	2	0.38	50	4	0.016	0.016	1
0,4×3	XXX	XXX	–	–	–	0.4	3	0.38	50	4	0.016	0.016	0.8
0,4×4	XXX	XXX	–	–	–	0.4	4	0.38	50	4	0.012	0.012	0.5
0,4×6	XXX	XXX	–	–	–	0.4	6	0.38	50	4	0.012	0.012	0.2
0,4×8	XXX	XXX	–	–	–	0.4	8	0.38	50	4	0.007	0.007	0.08
0,5×1	XXX	XXX	–	–	–	0.5	1	0.48	50	4	0.02	0.02	1
0,5×2	XXX	XXX	–	–	–	0.5	2	0.48	50	4	0.02	0.02	1
0,5×3	XXX	XXX	–	–	–	0.5	3	0.48	50	4	0.02	0.02	0.9
0,5×4	XXX	XXX	–	–	–	0.5	4	0.48	50	4	0.02	0.02	0.8
0,5×6	XXX	XXX	–	–	–	0.5	6	0.48	50	4	0.016	0.016	0.35
0,5×8	XXX	XXX	–	–	–	0.5	8	0.48	50	4	0.016	0.016	0.12
0,5×10	XXX	XXX	–	–	–	0.5	10	0.48	50	4	0.012	0.012	0.08
0,6×3	XXX	XXX	–	–	–	0.6	3	0.58	50	4	0.02	0.02	1
0,6×4	XXX	XXX	–	–	–	0.6	4	0.58	50	4	0.02	0.02	0.9
0,6×6	XXX	XXX	–	–	–	0.6	6	0.58	50	4	0.016	0.016	0.5
0,6×8	XXX	XXX	–	–	–	0.6	8	0.58	50	4	0.016	0.016	0.35
0,6×10	XXX	XXX	–	–	–	0.6	10	0.58	50	4	0.016	0.016	0.12
0,8×2	–	XXX	XXX	–	–	0.8	2	0.78	50	4	0.02	0.02	1
0,8×4	–	XXX	XXX	–	–	0.8	4	0.78	50	4	0.02	0.02	1
0,8×6	–	XXX	XXX	–	–	0.8	6	0.78	50	4	0.02	0.02	0.8

$ØD_c \times L_4$	11X 20 6041	11X 20 6042	11X 20 6043	11X 20 6044	11X 20 6045	L_s	L_4	$Ø D_4$	L_{tot}		Alu cast > 10 % Si f_z	Alu cast > 10 % Si f_z	Correction factor $a_{p\,korr}$
	Solid carbide torus cutter												
	RS_1 0.05	RS_1 0.1	RS_1 0.2	RS_1 0.3	RS_1 0.5								
mm	DLC	DLC	DLC	DLC	DLC	mm	mm	mm	mm	mm	mm	mm	
0,8×8	–	XXX	XXX	–	–	0.8	8	0.78	50	4	0.016	0.016	0.5
0,8×10	–	XXX	XXX	–	–	0.8	10	0.78	50	4	0.016	0.016	0.35
0,8×12	–	XXX	XXX	–	–	0.8	12	0.78	50	4	0.016	0.016	0.2
1×2	–	XXX	XXX	XXX	–	1	2	0.95	50	4	0.03	0.03	1
1×3	–	XXX	XXX	XXX	–	1	3	0.95	50	4	0.03	0.03	1
1×4	–	XXX	XXX	XXX	–	1	4	0.95	50	4	0.03	0.03	1
1×5	–	XXX	XXX	XXX	–	1	5	0.95	50	4	0.03	0.03	1
1×6	–	XXX	XXX	XXX	–	1	6	0.95	50	4	0.03	0.03	0.9
1×8	–	XXX	XXX	XXX	–	1	8	0.95	50	4	0.03	0.03	0.8
1×10	–	XXX	XXX	XXX	–	1	10	0.95	50	4	0.03	0.03	0.5
1×12	–	XXX	XXX	XXX	–	1	12	0.95	55	4	0.025	0.025	0.35
1×15	–	XXX	XXX	XXX	–	1	15	0.95	60	4	0.025	0.025	0.2
1×16	–	XXX	–	–	–	1	16	0.95	60	4	0.025	0.25	0.15
1×20	–	XXX	XXX	XXX	–	1	20	0.95	60	4	0.02	0.02	0.08
1×25	–	XXX	XXX	XXX	–	1	25	0.95	70	4	0.02	0.02	0.04
1×30	–	XXX	XXX	XXX	–	1	30	0.95	70	4	0.016	0.016	0.02
1,2×5	–	XXX	XXX	XXX	–	1.2	5	1.14	50	4	0.03	0.03	1
1,2×10	–	XXX	XXX	XXX	–	1.2	10	1.14	50	4	0.03	0.03	0.8
1,2×15	–	XXX	XXX	XXX	–	1.2	15	1.14	55	4	0.025	0.025	0.35
1,2×20	–	XXX	XXX	XXX	–	1.2	20	1.14	60	4	0.025	0.025	0.12
1,5×4	–	XXX	XXX	XXX	XXX	1.5	4	1.44	50	4	0.03	0.03	1
1,5×6	–	XXX	XXX	XXX	XXX	1.5	6	1.44	50	4	0.03	0.03	1
1,5×8	–	XXX	XXX	XXX	XXX	1.5	8	1.44	50	4	0.03	0.03	1
1,5×10	–	XXX	XXX	XXX	XXX	1.5	10	1.44	50	4	0.03	0.03	0.9
1,5×12	–	XXX	XXX	XXX	XXX	1.5	12	1.44	55	4	0.03	0.03	0.8
1,5×15	–	XXX	XXX	XXX	XXX	1.5	15	1.44	55	4	0.025	0.025	0.5
1,5×20	–	XXX	XXX	XXX	XXX	1.5	20	1.44	60	4	0.025	0.025	0.35
1,5×25	–	XXX	XXX	XXX	XXX	1.5	25	1.44	60	4	0.025	0.025	0.12
1,5×30	–	XXX	XXX	XXX	XXX	1.5	30	1.44	70	4	0.02	0.02	0.08
1,8×8	–	XXX	XXX	XXX	XXX	1.8	8	1.74	50	4	0.035	0.035	1
1,8×10	–	XXX	XXX	XXX	XXX	1.8	10	1.74	50	4	0.035	0.035	0.9
1,8×15	–	XXX	XXX	XXX	XXX	1.8	15	1.74	50	4	0.035	0.035	0.8
1,8×20	–	XXX	XXX	XXX	XXX	1.8	20	1.74	55	4	0.03	0.03	0.5
2×4	–	XXX	XXX	XXX	XXX	2	4	1.91	50	4	0.035	0.035	1
2×6	–	XXX	XXX	XXX	XXX	2	6	1.91	50	4	0.035	0.035	1
2×8	–	XXX	XXX	XXX	XXX	2	8	1.91	50	4	0.035	0.035	1
2×10	–	XXX	XXX	XXX	XXX	2	10	1.91	50	4	0.035	0.035	1
2×12	–	XXX	XXX	XXX	XXX	2	12	1.91	55	4	0.035	0.035	0.9
2×15	–	XXX	XXX	XXX	XXX	2	15	1.91	55	4	0.035	0.035	0.8
2×16	–	–	XXX	–	–	2	16	1.91	55	4	0.035	0.035	0.7
2×20	–	XXX	XXX	XXX	XXX	2	20	1.91	60	4	0.03	0.03	0.5
2×25	–	XXX	XXX	XXX	XXX	2	25	1.91	70	4	0.03	0.03	0.35
2×30	–	XXX	XXX	XXX	XXX	2	30	1.91	70	4	0.03	0.03	0.2
2×35	–	XXX	XXX	XXX	XXX	2	35	1.91	80	4	0.025	0.025	0.08
2×40	–	XXX	XXX	XXX	XXX	2	40	1.91	80	4	0.025	0.025	0.04
2,5×15	–	–	XXX	XXX	XXX	2.5	15	2.41	55	4	0.035	0.035	0.9
2,5×20	–	–	XXX	XXX	XXX	2.5	20	2.41	55	4	0.035	0.035	0.8
2,5×25	–	–	XXX	XXX	XXX	2.5	25	2.41	60	4	0.03	0.03	0.5
2,5×30	–	–	XXX	XXX	XXX	2.5	30	2.41	70	4	0.03	0.03	0.35
3×6	–	–	XXX	XXX	XXX	4.5	6	2.91	50	4	0.035	0.035	1
3×8	–	–	XXX	XXX	XXX	4.5	8	2.91	50	4	0.035	0.035	1
3×10	–	–	XXX	XXX	XXX	4.5	10	2.91	50	4	0.035	0.035	1
3×12	–	–	XXX	XXX	XXX	4.5	12	2.91	50	4	0.035	0.035	1
3×15	–	–	XXX	XXX	XXX	4.5	15	2.91	55	4	0.035	0.035	1
3×20	–	–	XXX	XXX	XXX	4.5	20	2.91	55	4	0.035	0.035	0.9
3×25	–	–	XXX	XXX	XXX	4.5	25	2.91	60	4	0.035	0.035	0.8
3×30	–	–	XXX	XXX	XXX	4.5	30	2.91	70	4	0.03	0.03	0.5
3×35	–	–	XXX	XXX	XXX	4.5	35	2.91	80	4	0.03	0.03	0.35
3×40	–	–	XXX	XXX	XXX	4.5	40	2.91	80	4	0.03	0.03	0.35
3×45	–	–	XXX	XXX	XXX	4.5	45	2.91	90	4	0.03	0.03	0.2

Solid carbide | Standard | Type W | e8 | 2 | 30° | a_e 0.5×D | a_e 0.05×D | h6 DIN 6535 HA

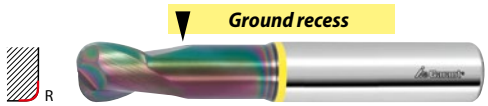
Garant

Solid carbide torus cutter

With **double relief ground side clearance angle and corner radius.**
High strength due to **strengthened core.**
Tolerance: **RS_1 = ±0.01 mm.**

20 6065 – With the latest generation of **DLC coating sp²**.

20 6040



20 6065

Suitable for/ v_c [m/min]	Alu	Alu	Alu cast > 10 % Si	PMMA acrylic	PE-HD	PA 66	PEEK	PF 31	AFRP aramid	PVDF GF20	POM GF25	PA 66 GF30	PEEK GF30	PTFE CF25	PEEK CF30	Honey-comb sandwich	Cu	CuZn					
ISO code	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N					
20 6040	180	140	105	180	130	150	130	110									80	100		●	○	○	○
20 6065	330	300	230	200	160	200	150	130		180	160	150	130	160		300	100	120		●	●	○	●

Ø e8 D_c / RS_1	11X 20 6040	11X 20 6065	L_s	RS_1	L_4	Ø D_4	L_{tot}		Alu f_z	Alu f_z
	Solid carbide torus cutter									
mm		DLC	mm	mm	mm	mm	mm	mm	mm	mm
3/0,3	XXX	XXX	4	0.3	14	2.7	50	3	0.01	0.011
4/0,3	XXX	XXX	5	0.3	16	3.7	50	4	0.02	0.023
4/1,0	XXX	XXX	5	1	16	3.7	50	4	0.02	0.023
5/0,3	XXX	XXX	6	0.3	18	4.6	54	5	0.02	0.023
5/1,0	XXX	XXX	6	1	18	4.6	54	5	0.02	0.023
6/0,3	XXX	XXX	7	0.3	21	5.5	57	6	0.03	0.034
6/1,0	XXX	XXX	7	1	21	5.5	57	6	0.03	0.034
6/2,0	XXX	XXX	7	2	21	5.5	57	6	0.03	0.034
8/0,3	XXX	XXX	9	0.3	27	7.4	63	8	0.04	0.045
8/1,0	XXX	XXX	9	1	27	7.4	63	8	0.04	0.045
8/2,0	XXX	XXX	9	2	27	7.4	63	8	0.04	0.045
10/0,3	XXX	XXX	11	0.3	32	9.2	72	10	0.05	0.056
10/1,0	XXX	XXX	11	1	32	9.2	72	10	0.05	0.056
10/1,5	XXX	XXX	11	1.5	32	9.2	72	10	0.05	0.056
10/3,0	XXX	XXX	11	3	32	9.2	72	10	0.05	0.056
12/1,0	XXX	XXX	12	1	38	11	83	12	0.07	0.079
12/1,5	XXX	XXX	12	1.5	38	11	83	12	0.07	0.079
12/2,5	XXX	XXX	12	2.5	38	11	83	12	0.07	0.079
12/4,0	XXX	XXX	12	4	38	11	83	12	0.07	0.079
16/1,0	XXX	XXX	16	1	44	15	92	16	0.09	0.1
16/2,0	XXX	XXX	16	2	44	15	92	16	0.09	0.1
16/2,5	XXX	XXX	16	2.5	44	15	92	16	0.09	0.1
16/5,0	XXX	XXX	16	5	44	15	92	16	0.09	0.1
20/5,0	XXX	XXX	20	5	54	19	104	20	0.12	0.15

Solid carbide | Standard | Type W | e8 | 2 | 30° | a_e 0.1×D | a_e 0.05×D | h6 DIN 6535 HA

Garant® Solid carbide torus cutters

With the latest generation of **DLC coating sp²**.
With **double relief ground side clearance angle and corner radius.**
High stability due to **strengthened core.**
Tolerance: **RS_1 = ±0.01 mm.**

20 6071

20 6075

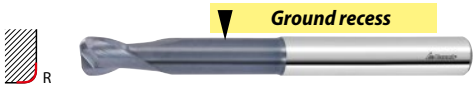
Suitable for/ v_c [m/min]	Alu	Alu	Alu cast > 10 % Si	PMMA acrylic	PE-HD	PA 66	PEEK	PF 31	AFRP aramid	PVDF GF20	POM GF25	PA 66 GF30	PEEK GF30	PTFE CF25	PEEK CF30	Hybrid	Cu	CuZn					
ISO code	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N					
20 6071	200	160	120	150	100	120	100	90		110	100	90	90	100			100	120		●	●	○	●
20 6075	180	140	105	130	80	100	80	70		90	80	70	70	80			100	120		●	●	○	●

Ø e8 D_c / RS_1	11X 20 6071	11X 20 6075	L_s	RS_1	L_4		Ø D_4	L_{tot}			Alu f_z	Alu f_z
	Solid carbide torus cutter				20 6071	20 6075		20 6071	20 6075			
mm	DLC	DLC	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
3/0,3	XXX	–	4	0.3	32	–	2.7	75	–	3	0.01	0.011
4/0,3	XXX	–	5	0.3	36	–	3.7	75	–	4	0.02	0.023
5/0,3	XXX	–	6	0.3	40	–	4.6	75	–	5	0.02	0.023
6/0,3	XXX	XXX	7	0.3	44	80	5.5	80	120	6	0.03	0.034
6/1,0	XXX	XXX	7	1	44	80	5.5	80	120	6	0.03	0.034
6/2,0	XXX	–	7	2	44	–	5.5	80	–	6	0.03	0.034
8/0,3	XXX	XXX	9	0.3	54	90	7.4	100	130	8	0.04	0.045
8/1,0	XXX	XXX	9	1	54	90	7.4	100	130	8	0.04	0.045
8/2,0	XXX	XXX	9	2	54	90	7.4	100	130	8	0.04	0.045
10/0,3	XXX	XXX	11	0.3	60	110	9.2	100	150	10	0.05	0.056
10/1,5	XXX	–	11	1.5	60	–	9.2	100	–	10	0.05	0.056
10/3,0	XXX	XXX	11	3	60	110	9.2	100	150	10	0.05	0.056
12/1,5	XXX	XXX	12	1.5	75	115	11	120	160	12	0.07	0.079
12/2,5	XXX	XXX	12	2.5	75	115	11	120	160	12	0.07	0.079
12/4,0	XXX	XXX	12	4	75	115	11	120	160	12	0.07	0.079
16/2,0	XXX	XXX	16	2	92	140	15	150	200	16	0.09	0.1
16/2,5	XXX	XXX	16	2.5	92	140	15	150	200	16	0.09	0.1
16/5,0	XXX	–	16	5	92	–	15	150	–	16	0.09	0.1

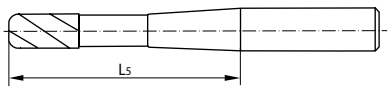
Solid carbide | Standard | Type N | e8 | 2 | 30° | a_e 0.2×D | a_e 0.05×D | h6 DIN 6535 HA

Garant® Solid carbide torus cutter

Double relief ground side clearance angle.



20 6140



Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	K						
20 6140		280	200			155	110	80	65	35				90	60		100	●		●	○	●	●

Ø e8 D_c / RS_1	11X 20 6140	L_s	RS_1	L_4	Ø D_4	L_5	L_{tot}		< 900 N f_z	< 900 N f_z
	Solid carbide torus cutter									
mm	TiAlN	mm	mm	mm	mm	mm	mm	mm	mm	mm
1/0,25	XXX	1.5	0.25	4	0.95	20	38	3	0.006	0.006
2/0,2	XXX	3	0.2	8	1.8	20	38	3	0.011	0.013
2/0,5	XXX	3	0.5	8	1.8	20	38	3	0.011	0.013
3/0,3	XXX	3.5	0.3	10	2.8	20	38	3	0.011	0.013
3/0,5	XXX	3.5	0.5	10	2.8	20	38	3	0.011	0.013
4/0,4	XXX	4	0.4	12	3.8	20	40	4	0.023	0.025
4/1,0	XXX	4	1	12	3.8	20	40	4	0.023	0.025

Solid carbide | Standard | Type H | 0 −0.005 | 2 | a_e 0.1×D | a_e 0.05×D | h5 DIN 6535 HA

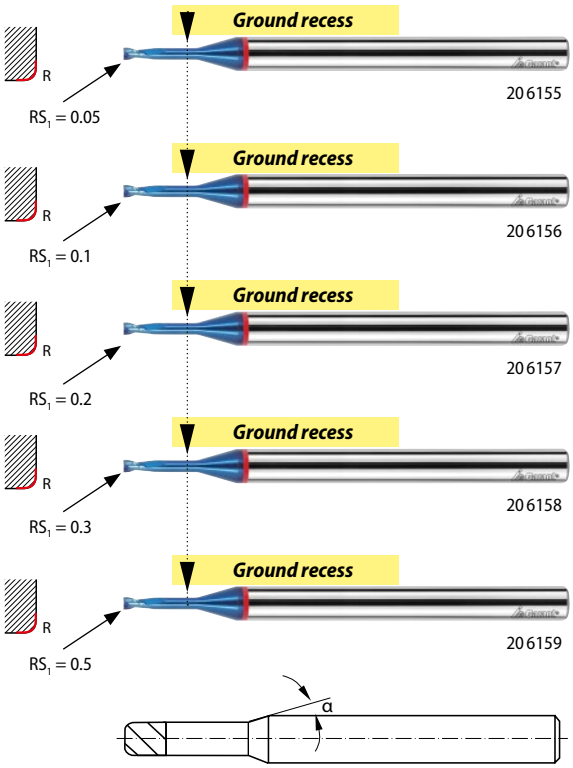
25° ≤0.8 mm | 30° ≥1 mm

Garant® Diabolo solid carbide micro precision torus cutter

GARANT Diabolo:
Special geometry, coating and carbide **for hard machining in the high-performance field.**
Suitable even for machining **electrolytic copper**.
Double-relief ground with 2 chamfers hollow ground for high-precision hard machining.
Recess angle α = 16°.
Tolerances:

- Corner radius: **RS_1 =±0.0025 mm.**
- Neck Ø: **D_4 = 0 / -0.01 mm.**

Note: At greater tool overhang lengths, use a reduced value for a_p!
Values for:
side milling: $a_p = 0.1 \times D \times a_p$ korr
copying: $a_p = 0.05 \times D \times a_p$ korr
To calculate the feed rate vf please use the actual speed of the machine (the maximum possible speed)!
e.g: vf = 18000 [rpm]× fz [mm/Z]× z



Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 50 HRC	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	CuZn					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	H	M	M	S	N					
20 6155–20 6159					200	200	190	170	120	100	72	55						140	○	○	●	●	

Ø $D_c \times L_4$	11x 20 6155	11x 20 6156	11x 20 6157	11x 20 6158	11x 20 6159	L_s	L_4	Ø D_4	L_{tot}		< 65 HRC f_z	< 65 HRC f_z	Correction factor $a_{p\,korr}$
	Diabolo solid carbide torus cutter												
	RS_1 0.05	RS_1 0.1	RS_1 0.2	RS_1 0.3	RS_1 0.5								
mm	TiAlN	TiAlN	TiAlN	TiAlN	TiAlN	mm	mm	mm	mm	mm	mm	mm	
0,2×0,5	XXX	–	–	–	–	0.2	0.5	0.18	50	4	0.009	0.009	1
0,2×1	XXX	–	–	–	–	0.2	1	0.18	50	4	0.009	0.009	1
0,2×1,5	XXX	–	–	–	–	0.2	1.5	0.18	50	4	0.009	0.009	0.8
0,2×2	XXX	–	–	–	–	0.2	2	0.18	50	4	0.005	0.005	0.5
0,2×3	XXX	–	–	–	–	0.2	3	0.18	50	4	0.005	0.005	0.2
0,3×1	XXX	–	–	–	–	0.3	1	0.28	50	4	0.012	0.012	1
0,3×2	XXX	–	–	–	–	0.3	2	0.28	50	4	0.012	0.012	0.9
0,3×3	XXX	–	–	–	–	0.3	3	0.28	50	4	0.009	0.009	0.5
0,3×4	XXX	–	–	–	–	0.3	4	0.28	50	4	0.009	0.009	0.35
0,4×1	XXX	XXX	–	–	–	0.4	1	0.38	50	4	0.012	0.012	1
0,4×2	XXX	XXX	–	–	–	0.4	2	0.38	50	4	0.012	0.012	1
0,4×3	XXX	XXX	–	–	–	0.4	3	0.38	50	4	0.012	0.012	0.8
0,4×4	XXX	XXX	–	–	–	0.4	4	0.38	50	4	0.009	0.009	0.5
0,4×5	XXX	XXX	–	–	–	0.4	5	0.38	50	4	0.009	0.009	0.35
0,4×6	XXX	XXX	–	–	–	0.4	6	0.38	50	4	0.009	0.009	0.2
0,5×1	XXX	XXX	–	–	–	0.5	1	0.48	50	4	0.015	0.015	1
0,5×2	XXX	XXX	–	–	–	0.5	2	0.48	50	4	0.015	0.015	1
0,5×3	XXX	XXX	–	–	–	0.5	3	0.48	50	4	0.015	0.015	0.9
0,5×4	XXX	XXX	–	–	–	0.5	4	0.48	50	4	0.015	0.015	0.8
0,5×5	XXX	XXX	–	–	–	0.5	5	0.48	50	4	0.012	0.012	0.5
0,5×6	XXX	XXX	–	–	–	0.5	6	0.48	50	4	0.012	0.012	0.35
0,5×8	XXX	XXX	–	–	–	0.5	8	0.48	50	4	0.012	0.012	0.12
0,5×10	XXX	XXX	–	–	–	0.5	10	0.48	50	4	0.009	0.009	0.08
0,6×2	XXX	XXX	–	–	–	0.6	2	0.58	50	4	0.015	0.015	1
0,6×3	XXX	XXX	–	–	–	0.6	3	0.58	50	4	0.015	0.015	1
0,6×4	XXX	XXX	–	–	–	0.6	4	0.58	50	4	0.015	0.015	0.9
0,6×5	XXX	XXX	–	–	–	0.6	5	0.58	50	4	0.015	0.015	0.8

Ø $D_c \times L_4$	1TX 20 6155	1TX 20 6156	1TX 20 6157	1TX 20 6158	1TX 20 6159	L_s	L_4	Ø D_4	L_{tot}		< 65 HRC f_z	< 65 HRC f_z	Correction factor $a_{p\,korr}$
	Diabolo solid carbide torus cutter												
	RS_1 0.05	RS_1 0.1	RS_1 0.2	RS_1 0.3	RS_1 0.5								
mm	TiAlN	TiAlN	TiAlN	TiAlN	TiAlN	mm	mm	mm	mm	mm	mm	mm	
0,6×6	XXX	XXX	–	–	–	0.6	6	0.58	50	4	0.012	0.012	0.5
0,6×8	XXX	XXX	–	–	–	0.6	8	0.58	50	4	0.012	0.012	0.35
0,6×10	XXX	XXX	–	–	–	0.6	10	0.58	50	4	0.012	0.012	0.12
0,8×2	–	XXX	XXX	–	–	0.8	2	0.78	50	4	0.015	0.015	1
0,8×3	–	XXX	XXX	–	–	0.8	3	0.78	50	4	0.015	0.015	1
0,8×4	–	XXX	XXX	–	–	0.8	4	0.78	50	4	0.015	0.015	1
0,8×5	–	XXX	XXX	–	–	0.8	5	0.78	50	4	0.015	0.015	0.9
0,8×6	–	XXX	XXX	–	–	0.8	6	0.78	50	4	0.015	0.015	0.8
0,8×8	–	XXX	XXX	–	–	0.8	8	0.78	50	4	0.012	0.012	0.5
0,8×10	–	XXX	XXX	–	–	0.8	10	0.78	50	4	0.012	0.012	0.35
1×2	–	XXX	XXX	XXX	–	1	2	0.95	50	4	0.02	0.02	1
1×3	–	XXX	XXX	XXX	–	1	3	0.95	50	4	0.02	0.02	1
1×4	–	XXX	XXX	XXX	–	1	4	0.95	50	4	0.02	0.02	1
1×5	–	XXX	XXX	XXX	–	1	5	0.95	50	4	0.02	0.02	1
1×6	–	XXX	XXX	XXX	–	1	6	0.95	50	4	0.02	0.02	0.9
1×8	–	XXX	XXX	XXX	–	1	8	0.95	50	4	0.02	0.02	0.8
1×10	–	XXX	XXX	XXX	–	1	10	0.95	50	4	0.015	0.015	0.5
1×12	–	XXX	XXX	XXX	–	1	12	0.95	55	4	0.015	0.015	0.35
1×14	–	XXX	XXX	XXX	–	1	14	0.95	55	4	0.015	0.015	0.2
1×16	–	XXX	XXX	XXX	–	1	16	0.95	60	4	0.015	0.015	0.12
1×18	–	XXX	XXX	XXX	–	1	18	0.95	60	4	0.01	0.01	0.08
1×20	–	XXX	XXX	XXX	–	1	20	0.95	60	4	0.01	0.01	0.04
1×25	–	XXX	XXX	XXX	–	1	25	0.95	70	4	0.01	0.01	0.04
1,2×5	–	XXX	XXX	XXX	–	1.2	5	1.14	50	4	0.02	0.02	1
1,2×10	–	XXX	XXX	XXX	–	1.2	10	1.14	50	4	0.02	0.02	0.8
1,2×15	–	XXX	XXX	XXX	–	1.2	15	1.14	55	4	0.015	0.015	0.35
1,2×20	–	XXX	XXX	XXX	–	1.2	20	1.14	60	4	0.015	0.015	0.12
1,5×3	–	XXX	XXX	XXX	XXX	1.5	3	1.44	50	4	0.02	0.02	1
1,5×4	–	XXX	XXX	XXX	XXX	1.5	4	1.44	50	4	0.02	0.02	1
1,5×6	–	XXX	XXX	XXX	XXX	1.5	6	1.44	50	4	0.02	0.02	1
1,5×8	–	XXX	XXX	XXX	XXX	1.5	8	1.44	50	4	0.02	0.02	1
1,5×10	–	XXX	XXX	XXX	XXX	1.5	10	1.44	50	4	0.02	0.02	0.9
1,5×12	–	XXX	XXX	XXX	XXX	1.5	12	1.44	55	4	0.02	0.02	0.8
1,5×14	–	XXX	XXX	XXX	XXX	1.5	14	1.44	55	4	0.02	0.02	0.8
1,5×16	–	XXX	XXX	XXX	XXX	1.5	16	1.44	55	4	0.015	0.015	0.5
1,5×18	–	XXX	XXX	XXX	XXX	1.5	18	1.44	60	4	0.015	0.015	0.35
1,5×20	–	XXX	XXX	XXX	XXX	1.5	20	1.44	60	4	0.015	0.015	0.35
2×4	–	XXX	XXX	XXX	XXX	2	4	1.91	50	4	0.03	0.03	1
2×6	–	XXX	XXX	XXX	XXX	2	6	1.91	50	4	0.03	0.03	1
2×8	–	XXX	XXX	XXX	XXX	2	8	1.91	50	4	0.03	0.03	1
2×10	–	XXX	XXX	XXX	XXX	2	10	1.91	50	4	0.03	0.03	1
2×12	–	XXX	XXX	XXX	XXX	2	12	1.91	55	4	0.03	0.03	0.9
2×15	–	XXX	XXX	XXX	XXX	2	15	1.91	55	4	0.03	0.03	0.9
2×18	–	XXX	XXX	XXX	XXX	2	18	1.91	60	4	0.03	0.03	0.8
2×20	–	XXX	XXX	XXX	XXX	2	20	1.91	60	4	0.03	0.03	0.8
2×22	–	XXX	XXX	XXX	XXX	2	22	1.91	60	4	0.025	0.025	0.5
2×25	–	XXX	XXX	XXX	XXX	2	25	1.91	70	4	0.025	0.025	0.5
2×30	–	XXX	XXX	XXX	XXX	2	30	1.91	70	4	0.025	0.025	0.35
2×35	–	XXX	XXX	XXX	XXX	2	35	1.91	80	4	0.025	0.025	0.2
2×40	–	XXX	XXX	XXX	XXX	2	40	1.91	80	4	0.02	0.02	0.08
2,5×8	–	–	XXX	XXX	XXX	2.5	8	2.41	50	4	0.03	0.03	1
2,5×10	–	–	XXX	XXX	XXX	2.5	10	2.41	50	4	0.03	0.03	1
2,5×15	–	–	XXX	XXX	XXX	2.5	15	2.41	55	4	0.03	0.03	0.9
2,5×20	–	–	XXX	XXX	XXX	2.5	20	2.41	55	4	0.03	0.03	0.8
2,5×25	–	–	XXX	XXX	XXX	2.5	25	2.41	60	4	0.025	0.025	0.5
2,5×30	–	–	XXX	XXX	XXX	2.5	30	2.41	70	4	0.025	0.025	0.35
3×8	–	–	–	XXX	XXX	4.5	8	2.91	50	4	0.03	0.03	1
3×10	–	–	–	XXX	XXX	4.5	10	2.91	50	4	0.03	0.03	1
3×12	–	–	–	XXX	XXX	4.5	12	2.91	50	4	0.03	0.03	1
3×15	–	–	–	XXX	XXX	4.5	15	2.91	55	4	0.03	0.03	1
3×18	–	–	–	XXX	XXX	4.5	18	2.91	55	4	0.03	0.03	0.9
3×20	–	–	–	XXX	XXX	4.5	20	2.91	55	4	0.03	0.03	0.9
3×25	–	–	–	XXX	XXX	4.5	25	2.91	60	4	0.03	0.03	0.8
3×30	–	–	–	XXX	XXX	4.5	30	2.91	70	4	0.02	0.02	0.5
3×35	–	–	–	XXX	XXX	4.5	35	2.91	80	4	0.02	0.02	0.35
3×40	–	–	–	XXX	XXX	4.5	40	2.91	80	4	0.02	0.02	0.35

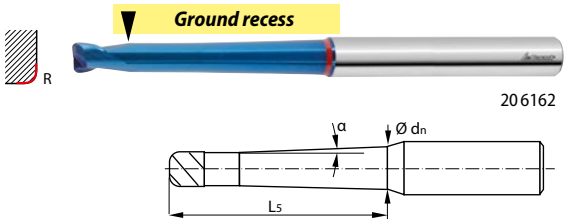
Solid carbide | Standard | Type H | e8 | 2 | 30° | a_e 0.2×D | a_e 0.05×D | h6 DIN 6535 HA | HPC

Garant® Diabolo solid carbide torus cutter HPC

GARANT Diabolo:
Special geometry, coating and carbide, specially for hard machining.
For copy milling with **angle α: 1° 30'.** Double relief ground side clearance angle.
Tolerances:

- Corner radius: **RS_1 = ±0.005 mm.**
- Angle **α = ±20'.**

Note: Standard application values:
f_z for a_p = 0.1×D.



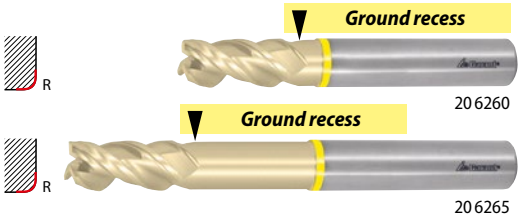
Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 50 HRC	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	Graphite GRP CRP					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	H	M	M	S	N					
20 6162								180	170	140	135	100							○	○	●	●	

Ø e8 D_c / RS_1	11X	20 6162	L_s	RS_1	L_4	Ø D_4	L_5	d_n	L_{tot}		< 65 HRC f_z	< 65 HRC f_z
		Diabolo solid carbide torus cutter HPC										
mm		TiAlN	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
0,8/0,08		XXX	1	0.08	1.6	0.75	27	2.1	75	3	0.005	0.005
1/0,1		XXX	1.2	0.1	2	0.95	27	2.3	75	3	0.005	0.005
1/0,25		XXX	2	0.25	4	0.85	40	2.7	80	6	0.005	0.005
1,2/0,12		XXX	1.4	0.12	2.4	1.15	27	2.5	75	3	0.005	0.005
1,5/0,15		XXX	1.8	0.15	3	1.45	27	2.7	75	3	0.005	0.005
2/0,2		XXX	2.4	0.2	4	1.95	27	3	75	3	0.005	0.005
2/0,5		XXX	2	0.5	8	1.8	40	3.5	80	6	0.005	0.005
3/0,3		XXX	3.6	0.3	6	2.95	27	4	75	4	0.019	0.019
3/0,5		XXX	2	0.5	12	2.8	40	4.3	80	6	0.019	0.019
3/1,0		XXX	2	1	12	2.8	40	4.3	80	6	0.019	0.019
4/1,0		XXX	3	1	16	3.8	40	5.1	80	6	0.019	0.019
6/1,0		XXX	4	1	25	5.8	50	7.1	100	8	0.048	0.048
6/2,0		XXX	4	2	25	5.8	50	7.1	100	8	0.048	0.048
8/1,0		XXX	4	1	32	7.8	60	9.3	120	10	0.06	0.06
8/2,0		XXX	4	2	32	7.8	60	9.3	120	10	0.06	0.06
10/1,5		XXX	6	1.5	40	9.8	80	11.9	160	12	0.07	0.07
12/1,5		XXX	8	1.5	50	11.8	100	14.5	200	16	0.08	0.08

Solid carbide | Standard | Type W | f8 | 3 | 45° | a_e 0.3×D | a_e 0.03×D | h6 DIN 6535 HA | G 2.5 n_{max} | HPC

Garant® Solid carbide torus cutter HPC

With strong core, **special chip breaker recesses** and **large polished flutes.**
New generation of high performance end mills in the HPC machining range.
Application: Especially for **high speed machining** in **mould and tool making** for **copy milling.**



Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Cu	CuZn					
ISO code	N	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	N	N					
20 6260		500	480	240													200	240		●	○	○	○
20 6265		250	240	120													100	120		●	○	○	○

Ø f8 D_c / RS_1	11X	20 6260	11X	20 6265	L_s		RS_1	L_4		Ø D_4	L_{tot}			Alu f_z	Alu f_z
		Solid carbide torus cutter HPC			20 6260	20 6265		20 6260	20 6265		20 6260	20 6265			
mm		ZOX		ZOX	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
5/0,5		XXX		–	13	–	0.5	18	–	4.7	57	–	6	0.032	0.032
5/1,0		XXX		–	13	–	1	18	–	4.7	57	–	6	0.03	0.03
6/0,5		XXX		XXX	13	10	0.5	18	42	5.7	57	80	6	0.035	0.035
6/1,0		XXX		XXX	13	10	1	18	42	5.7	57	80	6	0.032	0.032
8/0,5		XXX		XXX	21	13	0.5	25	62	7.4	63	100	8	0.055	0.055
8/1,0		XXX		XXX	21	13	1	25	62	7.4	63	100	8	0.05	0.05
10/0,5		XXX		XXX	22	16	0.5	30	58	9.2	72	100	10	0.065	0.065
10/1,0		XXX		XXX	22	16	1	30	58	9.2	72	100	10	0.06	0.06
12/0,5		XXX		XXX	26	19	0.5	36	73	11	83	120	12	0.07	0.07
12/1,0		XXX		XXX	26	19	1	36	73	11	83	120	12	0.065	0.065
16/2,0		XXX		XXX	36	25	2	42	100	15	92	150	16	0.08	0.08
16/4,0		XXX		XXX	36	25	4	42	100	15	92	150	16	0.07	0.07
20/4,0		XXX		XXX	41	32	4	52	98	19	104	150	20	0.1	0.1

Solid carbide | Type W | h6 | 3 | 45° | a_e 0.05×D | h6 DIN 6535 HA | G 2.5 ^{n}max

Garant® Solid carbide torus cutter

Eccentric relief ground, additionally **polish ground** in the flutes for **outstanding chip evacuation** in long-chipping aluminium workpieces.

Tolerances:

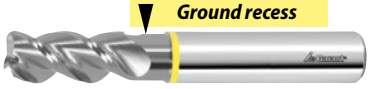
- Corner radius

RS_1 = 0.5 tolerance ±0.02.
RS_1 > 0.5 – 1.5 tolerance ±0.03.
RS_1 > 1.5 tolerance ±0.05.

20 6192 – Dimensions to manufacturer's standard.

DIN 6527 | a_e 0.5×D | R

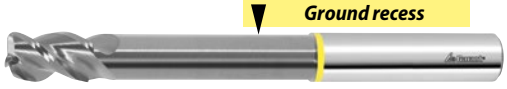
Ground recess



20 6190

Standard | a_e 0.3×D | R

Ground recess



20 6192

Suitable for/ v_c [m/min]	Alu	Alu	Alu cast > 10 % Si	PMMA acrylic	PE-HD	PA 66	PEEK	PF 31	AFRP aramid	PVDF GF20	POM GF25	PA 66 GF30	PEEK GF30	PTFE CF25	PEEK CF30	Hybrid	Cu	CuZn					
ISO code	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N					
20 6190	180	140	105	180	130	150	130	110									80	100		●	○	○	○
20 6192	130	100	80	130	90	100	90	80									70	90		●	○	○	○

Ø h6 D_c / RS_1	11X 20 6190	11X 20 6192	L_s		RS_1	L_4		Ø D_4	L_{tot}			Alu f_z	Alu f_z
	Solid carbide torus cutter		20 6190	20 6192		20 6190	20 6192		20 6190	20 6192			
mm			mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
5/0,5	XXX	XXX	13	8	0.5	19	30	4.7	57	80	6	0.02	0.02
5/1,0	XXX	XXX	13	8	1	19	30	4.7	57	80	6	0.02	0.02
6/0,5	XXX	XXX	13	10	0.5	19	42	5.7	57	80	6	0.03	0.03
6/1,0	XXX	XXX	13	10	1	19	42	5.7	57	80	6	0.03	0.03
8/0,5	XXX	XXX	21	13	0.5	25	62	7.4	63	100	8	0.04	0.04
8/1,0	XXX	XXX	21	13	1	25	62	7.4	63	100	8	0.04	0.04
8/2,0	XXX	XXX	21	13	2	25	62	7.4	63	100	8	0.04	0.04
10/0,5	XXX	XXX	22	16	0.5	30	58	9.2	72	100	10	0.05	0.05
10/1,0	XXX	XXX	22	16	1	30	58	9.2	72	100	10	0.05	0.05
10/2,0	XXX	XXX	22	16	2	30	58	9.2	72	100	10	0.05	0.05
10/3,0	XXX	XXX	22	16	3	30	58	9.2	72	100	10	0.05	0.05
12/0,5	XXX	XXX	26	19	0.5	36	73	11	83	120	12	0.07	0.08
12/1,0	XXX	XXX	26	19	1	36	73	11	83	120	12	0.07	0.08
12/2,0	XXX	XXX	26	19	2	36	73	11	83	120	12	0.07	0.08
12/3,0	XXX	XXX	26	19	3	36	73	11	83	120	12	0.07	0.08
16/2,0	XXX	XXX	36	25	2	42	100	15	92	150	16	0.09	0.1
16/3,0	XXX	XXX	36	25	3	42	100	15	92	150	16	0.09	0.1
16/4,0	XXX	XXX	36	25	4	42	100	15	92	150	16	0.09	0.1
20/2,0	XXX	XXX	41	32	2	52	98	19	104	150	20	0.12	0.13
20/3,0	XXX	XXX	41	32	3	52	98	19	104	150	20	0.12	0.13
20/4,0	XXX	XXX	41	32	4	52	98	19	104	150	20	0.12	0.13

Solid carbide | Standard | Type W | h6 | 3 | 45° | ≠ | TPC $a_{e\,max}$ 0.12×D | TPC | h6 DIN 6535 HA | h6 DIN 6535 HB | G 2.5 ^{n}max | G 2.5 ^{n}max

Garant® Solid carbide torus cutter TPC

Eccentric relief ground, additionally **polish ground** in the flutes for **outstanding chip evacuation** in long-chipping aluminium workpieces.
With double chip-breaker for exemplary chip formation.

20 6211 – With the latest generation of **DLC coating sp²**.

Application: Especially for **MTC (Multi Task Cutting)** use on the new generation of turning / milling centres.

Note: $a_{e\,max}$ = 0.12×D for TPC machining.
h_{max}: The values stated in the table are maximum values.

R

Ground recess

20 6210

R

Ground recess

20 6211

Suitable for/ v_c [m/min]	Alu	Alu	Alu cast > 10 % Si	PMMA acrylic	PE-HD	PA 66	PEEK	PF 31	AFRP aramid	PVDF GF20	POM GF25	PA 66 GF30	PEEK GF30	PTFE CF25	PEEK CF30	Honey-comb sandwich	Cu	CuZn					
ISO code	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N					
20 6210	130	100	85	125	90	100	80	70								100	80	100		●	○	○	○
20 6211	280	270	180	125	110	140	90	80		125	115	105	90	110		120	70	90		●	●	○	●

Ø h6 D_c / RS_1	11X 20 6210	11X 20 6211	L_s	RS_1	L_4	Ø D_4	L_{tot}		Shank form	TPC Alu h_{max}
	Solid carbide torus cutter									
	TPC	DLC								
mm			mm	mm	mm	mm	mm	mm		mm
6/0,5	XXX	XXX	25	0.5	30	5.7	71	6	HA	0.032
6/1,0	XXX	XXX	25	1	30	5.7	71	6	HA	0.032

Ø h6 D_c / RS_1	11X 20 6210	11X 20 6211	L_3	RS_1	L_4	Ø D_4	L_{tot}		Shank form	TPC Alu h_{max}
	Solid carbide torus cutter									
	TPC									
mm		DLC	mm	mm	mm	mm	mm	mm		mm
8/0,5	XXX	XXX	33	0.5	40	7.4	80	8	HA	0.045
8/1,0	XXX	XXX	33	1	40	7.4	80	8	HA	0.045
8/2,0	XXX	XXX	33	2	40	7.4	80	8	HA	0.045
10/0,5	XXX	XXX	41	0.5	50	9.2	95	10	HA	0.055
10/1,0	XXX	XXX	41	1	50	9.2	95	10	HA	0.055
10/2,0	XXX	XXX	41	2	50	9.2	95	10	HA	0.055
10/3,0	XXX	XXX	41	3	50	9.2	95	10	HA	0.055
12/0,5	XXX	XXX	49	0.5	60	11	109	12	HA	0.08
12/1,0	XXX	XXX	49	1	60	11	109	12	HA	0.08
12/2,0	XXX	XXX	49	2	60	11	109	12	HA	0.08
12/3,0	XXX	XXX	49	3	60	11	109	12	HA	0.08
16/2,0	XXX	XXX	65	2	80	15	132	16	HB	0.095
16/3,0	XXX	XXX	65	3	80	15	132	16	HB	0.095
16/4,0	XXX	XXX	65	4	80	15	132	16	HB	0.095
20/2,0	XXX	XXX	82	2	100	19	154	20	HB	0.125
20/3,0	XXX	XXX	82	3	100	19	154	20	HB	0.125
20/4,0	XXX	XXX	82	4	100	19	154	20	HB	0.125

Solid carbide | Type W | h6 | 3 | 45° | a_e 0.05×D | h6 DIN 6535 HA | G 2.5 r_{max}

Garant

Solid carbide torus cutter

With the latest generation of **DLC coating sp²**.
Eccentric relief ground, additionally **polish ground** in the flutes for **outstanding chip evacuation** in long-chipping aluminium components.
Tolerances:

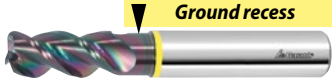
- Corner radius

RS_1 = 0.5 tolerance ±0.02.
RS_1 > 0.5 – 1.5 tolerance ±0.03.
RS_1 > 1.5 tolerance ±0.05.

20 6250 – Dimensions to manufacturer's standard.

DIN 6527 | a_e 0.5×D | R

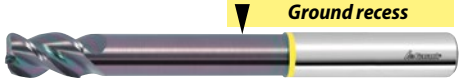
Ground recess



20 6230

Standard | a_e 0.3×D | R

Ground recess



20 6250

Suitable for/ v_c [m/min]	Alu	Alu	Alu cast > 10 % Si	PMMA acrylic	PE-HD	PA 66	PEEK	PF 31	AFRP aramid	PVDF GF20	POM GF25	PA 66 GF30	PEEK GF30	PTFE CF25	PEEK CF30	Honey-comb sandwich	Cu	CuZn					
ISO code	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N					
20 6230	480	440	400	200	160	200	150	130		180	160	150	130	160		300	160	200		●	●	○	●
20 6250	280	260	240	120	100	120	90	80		110	100	90	80	90		180	100	120		●	●	○	●

Ø h6 D_c / RS_1	11X 20 6230	11X 20 6250	L_3		RS_1	L_4		Ø D_4	L_{tot}			Alu f_z	Alu f_z
	Solid carbide torus cutter												
			20 6230	20 6250		20 6230	20 6250		20 6230	20 6250			
mm	DLC	DLC	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
4/1,0	XXX	XXX	11	6.5	1	17	24	3.7	57	80	6	0.02	0.02
5/0,5	XXX	XXX	13	8	0.5	19	30	4.7	57	80	6	0.02	0.02
5/1,0	XXX	XXX	13	8	1	19	30	4.7	57	80	6	0.02	0.02
6/0,5	XXX	XXX	13	10	0.5	19	42	5.7	57	80	6	0.03	0.03
6/1,0	XXX	XXX	13	10	1	19	42	5.7	57	80	6	0.03	0.03
8/0,5	XXX	XXX	21	13	0.5	25	62	7.4	63	100	8	0.04	0.04
8/1,0	XXX	XXX	21	13	1	25	62	7.4	63	100	8	0.04	0.04
8/2,0	XXX	XXX	21	13	2	25	62	7.4	63	100	8	0.04	0.04
10/0,5	XXX	XXX	22	16	0.5	30	58	9.2	72	100	10	0.05	0.05
10/1,0	XXX	XXX	22	16	1	30	58	9.2	72	100	10	0.05	0.05
10/2,0	XXX	XXX	22	16	2	30	58	9.2	72	100	10	0.05	0.05
10/3,0	XXX	XXX	22	16	3	30	58	9.2	72	100	10	0.05	0.05
12/0,5	XXX	XXX	26	19	0.5	36	73	11	83	120	12	0.07	0.08
12/1,0	XXX	XXX	26	19	1	36	73	11	83	120	12	0.07	0.08
12/2,0	XXX	XXX	26	19	2	36	73	11	83	120	12	0.07	0.08
12/3,0	XXX	XXX	26	19	3	36	73	11	83	120	12	0.07	0.08
16/1,0	XXX	XXX	36	25	1	42	100	15	92	150	16	0.09	0.1
16/2,0	XXX	XXX	36	25	2	42	100	15	92	150	16	0.09	0.1
16/3,0	XXX	XXX	36	25	3	42	100	15	92	150	16	0.09	0.1
16/4,0	XXX	XXX	36	25	4	42	100	15	92	150	16	0.09	0.1
16/5,0	XXX	XXX	36	25	5	42	100	15	92	150	16	0.09	0.1
20/2,0	XXX	XXX	41	32	2	52	98	19	104	150	20	0.12	0.13
20/3,0	XXX	XXX	41	32	3	52	98	19	104	150	20	0.12	0.13
20/4,0	XXX	XXX	41	32	4	52	98	19	104	150	20	0.12	0.13
20/5,0	XXX	XXX	41	32	5	52	98	19	104	150	20	0.12	0.13

Solid carbide | Type W | e8 | 3 | 42° | ≠ | ≠ | a_e 0.5×D | a_e 0.05×D | h6 DIN 6535 HA | G 2.5 n_{max} | HPC

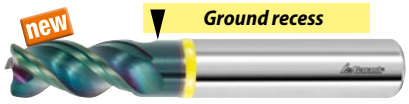
GARANT Master Alu PickPocket HPC solid carbide torus cutter

Cutting edge length to DIN 6527.
Tolerance: Corner radius **RS_1 = ±0.01 mm.**

20 6255 – All dimensions to DIN.

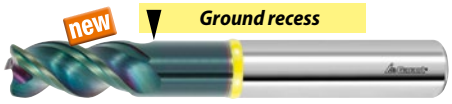
Application: Especially for **high speed machining** in **mould and tool making** for **copy milling.**

DIN 6527 R



20 6255

Standard R



20 6257

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	PMMA acrylic	PE-HD	PA 66	PEEK	PF 31	AFRP aramid	PVDF GF20	POM GF25	PA 66 GF30	PEEK GF30	PTFE CF25	PEEK CF30	Honey-comb sandwich	Cu	CuZn					
ISO code	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N					
20 6255/6257	550	500	450	200	160	200	150	130		180	160	150	130	160		300	160	200		●	○	○	●

Ø e8 D_C	11X	20 6255	L_s	RS_1	L_4	Ø D_4	L_{tot}		Alu f_z	Alu f_z
		GARANT Master Alu PickPocket solid carbide torus cutter								
		HPC								
mm		DLC	mm	mm	mm	mm	mm	mm	mm	mm
5/0,5		XXX	9	0.5	–	–	57	6	0.08	0.09
5/1,0		XXX	9	1	–	–	57	6	0.08	0.09
6/0,5		XXX	13	0.5	19	5.8	57	6	0.08	0.09
6/1,0		XXX	13	1	19	5.8	57	6	0.08	0.09
8/0,5		XXX	19	0.5	25	7.8	63	8	0.1	0.12
8/1,0		XXX	19	1	25	7.8	63	8	0.1	0.12
10/0,5		XXX	22	0.5	30	9.8	72	10	0.12	0.14
10/1,0		XXX	22	1	30	9.8	72	10	0.12	0.14
12/0,5		XXX	26	0.5	36	11.8	83	12	0.15	0.16
12/1,0		XXX	26	1	36	11.8	83	12	0.15	0.16
16/1,0		XXX	31	1	42	15.8	92	16	0.18	0.2
16/2,0		XXX	31	2	42	15.8	92	16	0.18	0.2
16/4,0		XXX	31	4	42	15.8	92	16	0.18	0.2
16/5,0		XXX	31	5	42	15.8	92	16	0.18	0.2
20/4,0		XXX	41	4	52	19.8	104	20	0.22	0.25
20/5,0		XXX	41	5	52	19.8	104	20	0.22	0.25

Ø f8 D_C / RS_1	11X	20 6257	L_s	RS_1	L_4	Ø D_4	L_{tot}		Alu f_z	Alu f_z
		GARANT Master Alu PickPocket solid carbide torus cutter								
		HPC								
mm		DLC	mm	mm	mm	mm	mm	mm	mm	mm
6/0,5		XXX	13	0.5	24	5.8	62	6	0.06	0.08
6/1,0		XXX	13	1	24	5.8	62	6	0.06	0.08
8/0,5		XXX	19	0.5	30	7.8	68	8	0.07	0.1
8/1,0		XXX	19	1	30	7.8	68	8	0.07	0.1
10/0,5		XXX	22	0.5	38	9.8	80	10	0.08	0.11
10/1,0		XXX	22	1	38	9.8	80	10	0.08	0.11
12/0,5		XXX	26	0.5	46	11.8	93	12	0.1	0.12
12/1,0		XXX	26	1	46	11.8	93	12	0.1	0.12
16/1,0		XXX	31	1	58	15.8	108	16	0.14	0.16
16/2,0		XXX	31	2	58	15.8	108	16	0.14	0.16
16/4,0		XXX	31	4	58	15.8	108	16	0.14	0.16
16/5,0		XXX	31	5	58	15.8	108	16	0.14	0.16
20/4,0		XXX	41	4	74	19.8	126	20	0.18	0.2
20/5,0		XXX	41	5	74	19.8	126	20	0.18	0.2

Solid carbide | Standard | Type H | h9 | 12° | h5 DIN 6535 HA | HPC

2 | 4

Diabolo solid carbide end torus cutter HPC

GARANT Diabolo:
Special geometry, coating and carbide for hard machining.
Tolerance: Corner radius **RS_1 = ±0.01 mm.**
Special front cutter geometry for traverse milling at very high feed rates.

Application: **For copy and traverse milling** in hard machining **under HPC / HSC conditions.** Special milling strategies allow **very high metal removal rates.**

Note: **Tools can be reground.**
20 6273 – **Successor product to No. 206276.**
20 6275 – **Successor product to No. 206278.**

20 6273

20 6275

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 50 HRC	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	Graphite GRP CRP					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	H	M	M	S	N					
20 6273								190	170	150	110	80							○	○	●	●	
20 6275								160	145	130	95	70							○	○	●	●	

Ø h9 D_c	11X 20 6273	11X 20 6275	No. of teeth Z	$a_{p\,max}$ transverse	Programming radius	L_s	L_4		Ø D_4	L_{tot}			< 60 HRC f_z	
	Diabolo solid carbide end torus cutter HPC						20 6273	20 6275		20 6273	20 6275		20 6273	20 6275
mm	TiAlN	TiAlN		mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
2	XXX	XXX	2	0.06	0.3	1.5	13	18	1.7	54	75	6	0.024	0.018
3	XXX	XXX	2	0.1	0.3	1.5	15	20	2.7	54	75	6	0.05	0.037
4	XXX	XXX	2	0.15	0.5	2.5	16	24	3.6	58	85	6	0.067	0.049
5	XXX	XXX	4	0.17	0.5	3.5	18	28	4.6	65	100	6	0.078	0.059
6	XXX	XXX	4	0.2	1	3.5	20	28	5.2	65	100	6	0.088	0.065
8	XXX	XXX	4	0.25	1.5	4.8	24	40	7	70	100	8	0.115	0.086
10	XXX	XXX	4	0.3	2	5.8	26	48	9	85	100	10	0.158	0.116
12	XXX	XXX	4	0.4	2	6.8	30	56	11	93	120	12	0.178	0.13
16	XXX	–	4	0.5	2.5	8.8	35	–	14.5	100	–	16	0.229	–

Solid carbide | Standard | Type N | h9 | 15° | a_e 0.05×D | h6 DIN 6535 HA | HPC

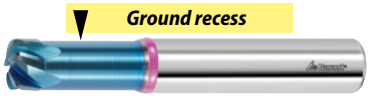
2 | 4 | 5

GARANT Master Titan HPC solid carbide end torus cutter

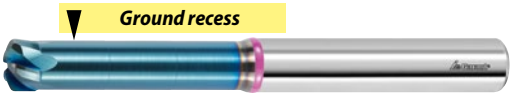
Tolerance: Corner radius **RS_1 = ±0.01 mm.**
Special front cutter geometry for traverse milling at very high feed rates.

Application: **For copy and traverse milling** of titanium under HPC conditions. Using special milling strategies **very high rates of metal removal can be achieved.**

Note: Regrinding not recommended.



20 6286



20 6288

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	Graphite GRP CRP	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	N						
20 6286																90			●				
20 6288																80			●				

Ø h9 D_c	11Z 20 6286	11Z 20 6288	No. of teeth Z	$a_{p\,max}$ trans-verse	Programming radius	L_s	L_4		Ø D_4	L_{tot}			Ti > 850 N f_z	
	GARANT Master Titan solid carbide end torus cutter HPC						20 6286	20 6288		20 6286	20 6288		20 6286	20 6288
mm	TiAlN	TiAlN		mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
2	XXX	XXX	2	0.15	0.3	1.5	13	18	1.7	54	75	6	0.018	0.015
4	XXX	XXX	2	0.25	0.5	2.5	16	24	3.6	57	85	6	0.061	0.05
6	XXX	XXX	4	0.4	1	3.5	20	28	5.2	65	100	6	0.082	0.075
8	XXX	XXX	5	0.5	1.5	4.8	24	40	7	70	100	8	0.108	0.1
10	XXX	XXX	5	0.7	2	5.8	26	48	9	85	100	10	0.14	0.12
12	XXX	XXX	5	0.8	2	6.8	30	56	11	93	120	12	0.17	0.15

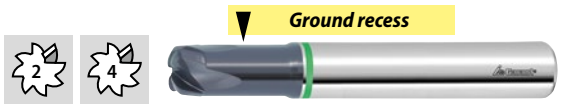
Solid carbide | Standard | Type N | h9 | 15° | h5 DIN 6535 HA | HPC

Garant Solid carbide end torus cutter HPC

Special centre cutting edge geometry for traverse milling at very high feed rates
Tolerance: Corner radius **RS_1 = ±0.01 mm.**

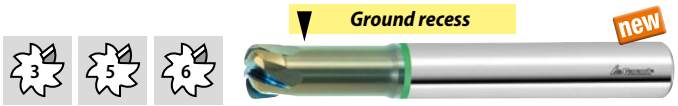
Application: **For copy and traverse milling** over the full range of hard machining **under HPC/HSC conditions.**
Using special milling strategies **very high rates of metal removal can be achieved.**

Note: **Tools can be reground.**
20 6266 – **Successor product to No. 206272.**
20 6267 – **Successor product to No. 206274.**
20 6262/6263 – With conically increasing recess to guarantee stability at long overhangs.

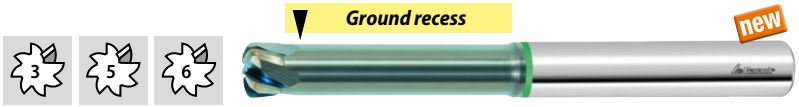


20 6266

20 6267



20 6262



20 6263

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	Graphite GRP CRP	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	N						
20 6262				175	170	155	140	130						100	95			●		●	●	○	○
20 6263				170	150	135	130	125						95	90			●		●	●	○	○
20 6266				155	150	145	140	130						90				●		●	●	○	○
20 6267				150	140	130	125	115						80				●		●	●	○	○

Ø h9 D_C	11X 20 6266	11X 20 6267	No. of teeth Z	$a_{p\,max}$ transverse	Programming radius	L_s	L_4		Ø D_4	L_{tot}			< 900 N f_z	
	Solid carbide end torus cutter HPC						20 6266	20 6267		20 6266	20 6267		20 6266	20 6267
mm	TiAlN	TiAlN		mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
2	XXX	XXX	2	0.15	0.3	1.5	13	18	1.7	54	75	6	0.026	0.019
3	XXX	XXX	2	0.2	0.3	1.5	15	20	2.7	54	75	6	0.056	0.044
4	XXX	XXX	2	0.25	0.5	2.5	16	24	3.6	58	85	6	0.076	0.06
5	XXX	XXX	4	0.35	0.5	3.5	18	28	4.6	65	100	6	0.099	0.079
6	XXX	XXX	4	0.4	1	3.5	20	28	5.2	65	100	6	0.106	0.085
8	XXX	XXX	4	0.5	1.5	4.8	24	40	7	70	100	8	0.158	0.127
10	XXX	XXX	4	0.7	2	5.8	26	48	9	85	100	10	0.216	0.172
12	XXX	XXX	4	0.8	2	6.8	30	56	11	93	120	12	0.266	0.213
16	XXX	–	4	1	2.5	8.8	35	–	14.5	100	–	16	0.344	–

Ø h9 D_C	11X 20 6262	11X 20 6263	No. of teeth Z	$a_{p\,max}$ transverse	Programming radius	L_s	L_4		Ø $D_{4\,min}$	Ø $D_{4\,max}$	L_{tot}			< 900 N f_z	
	Solid carbide end torus cutter HPC						20 6262	20 6263			20 6262	20 6263		20 6262	20 6263
mm	TiAlN	TiAlN		mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
2	XXX	–	3	0.15	0.3	1.5	13	–	1.7	1.95	54	–	6	0.03	–
4	XXX	XXX	3	0.25	0.5	2.5	16	24	3.6	3.95	58	85	6	0.07	0.06
5	XXX	–	5	0.35	0.5	3.5	18	–	4.6	4.9	65	–	6	0.08	–
6	XXX	XXX	5	0.4	1	3.5	20	28	5.2	5.9	65	100	6	0.09	0.07
8	XXX	XXX	5	0.5	1.5	4.8	24	40	7	7.9	70	100	8	0.12	0.1
10	XXX	XXX	6	0.7	2	5.8	26	48	9	9.9	85	100	10	0.16	0.14
12	XXX	XXX	6	0.8	2	6.8	30	56	11	11.9	93	120	12	0.22	0.2

Solid carbide | Standard | Type H | e8 | 4 | 30° | a_e 0.2×D | a_e 0.05×D | h6 DIN 6535 HA

Garant

Solid carbide torus cutter

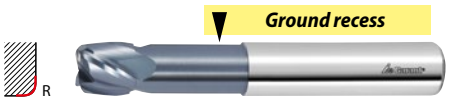
With **double relief ground side clearance angle.**
Tolerance: Corner radius **RS_1 = ± 0.005 mm.**

Application: Especially for **high speed machining** in **mould and tool making** for **copy milling.** Excellent results when **milling dry.**

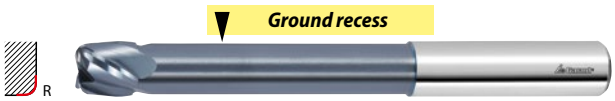
Note:

20 6280 – **NEW GENERATION AVAILABLE!**
Recommended successor product is No. 206333.

20 6300 – **NEW GENERATION AVAILABLE!**
Recommended successor product is No. 206335.



20 6280



20 6300

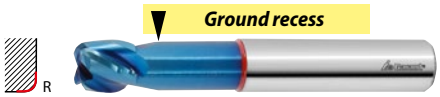
Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	Graphite GRP CRP					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	K	N					
20 6280					155	110	80	65	35					90			100		●	○	●	●	
20 6300					140	100	70	60	35					80			90		●	○	●	●	

∅ e8 D_c / RS_1	11X 20 6280	11X 20 6300	L_5	RS_1	L_4		∅ D_4	L_{tot}			< 1100 N f_z	< 1100 N f_z
	Solid carbide torus cutter				20 6280	20 6300		20 6280	20 6300			
mm	TiAlN	TiAlN	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
1/0,1	XXX	XXX	1.5	0.1	10	20	0.85	50	75	3	0.003	0.003
1/0,2	XXX	XXX	1.5	0.2	10	20	0.85	50	75	3	0.003	0.003
2/0,2	XXX	XXX	2.5	0.2	12	25	1.8	50	75	3	0.006	0.007
2/0,3	XXX	XXX	2.5	0.3	12	25	1.8	50	75	3	0.006	0.007
2/0,5	XXX	XXX	2.5	0.5	12	25	1.8	50	75	3	0.006	0.007
3/0,3	XXX	XXX	4	0.3	14	32	2.7	50	75	3	0.006	0.007
3/0,5	XXX	XXX	4	0.5	14	32	2.7	50	75	3	0.006	0.007
3/1,0	XXX	XXX	4	1	14	32	2.7	50	75	3	0.006	0.007
4/0,4	XXX	XXX	5	0.4	16	36	3.7	50	75	4	0.013	0.014
4/0,5	XXX	XXX	5	0.5	16	36	3.7	50	75	4	0.013	0.014
4/1,0	XXX	XXX	5	1	16	36	3.7	50	75	4	0.013	0.014
5/0,5	XXX	XXX	6	0.5	18	40	4.6	54	75	5	0.013	0.014
5/1,0	XXX	XXX	6	1	18	40	4.6	54	75	5	0.013	0.014
6/0,5	XXX	XXX	7	0.5	21	44	5.5	57	80	6	0.02	0.023
6/1,0	XXX	XXX	7	1	21	44	5.5	57	80	6	0.02	0.023
6/1,5	XXX	XXX	7	1.5	21	44	5.5	57	80	6	0.02	0.023
8/0,5	XXX	XXX	9	0.5	27	54	7.4	63	100	8	0.025	0.028
8/1,0	XXX	XXX	9	1	27	54	7.4	63	100	8	0.025	0.028
8/1,5	XXX	XXX	9	1.5	27	54	7.4	63	100	8	0.025	0.028
8/2,0	XXX	XXX	9	2	27	54	7.4	63	100	8	0.025	0.028
10/0,5	XXX	XXX	11	0.5	32	60	9.2	72	100	10	0.03	0.034
10/1,0	XXX	XXX	11	1	32	60	9.2	72	100	10	0.03	0.034
10/1,5	XXX	XXX	11	1.5	32	60	9.2	72	100	10	0.03	0.034
10/2,0	XXX	XXX	11	2	32	60	9.2	72	100	10	0.03	0.034
12/0,5	XXX	XXX	12	0.5	38	75	11	83	120	12	0.04	0.045
12/1,0	XXX	XXX	12	1	38	75	11	83	120	12	0.04	0.045
12/1,5	XXX	XXX	12	1.5	38	75	11	83	120	12	0.04	0.045
12/2,0	XXX	XXX	12	2	38	75	11	83	120	12	0.04	0.045
12/5,0	XXX	XXX	12	5	38	75	11	83	120	12	0.04	0.045
16/1,0	XXX	XXX	16	1	44	92	15	92	150	16	0.055	0.062
16/2,0	XXX	XXX	16	2	44	92	15	92	150	16	0.055	0.062
16/6,0	XXX	XXX	16	6	44	92	15	92	150	16	0.055	0.062
20/1,0	XXX	XXX	20	1	55	92	18.5	104	150	20	0.065	0.073
20/2,5	–	XXX	20	2.5	–	92	18.5	–	150	20	0.065	0.073

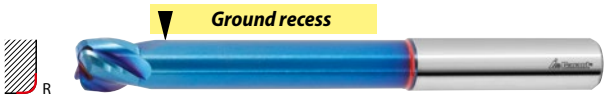
Solid carbide | Standard | Type H | e8 | 4 | 30° | ≠ | a_e 0.2×D | a_e 0.05×D | h6 DIN 6535 HA | HPC

Garant Diabolo solid carbide torus cutter HPC

GARANT Diabolo:
Special geometry, coating and carbide, specially for hard machining.
Double relief ground side clearance angle.
Tolerance: Corner radius **RS_1 = ± 0.005 mm.**



20 6322



20 6342

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 50 HRC	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	Graphite GRP CRP					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	H	M	M	S	N					
20 6322								200	190	170	150	110							○	○	●	●	
20 6342								160	150	135	120	90							○	○	●	●	

Ø e8 D_c / RS_1	11X 20 6322	11X 20 6342	L_5	RS_1	L_4		Ø D_4	L_{tot}			< 65 HRC f_z	< 65 HRC f_z
	Diabolo solid carbide torus cutter											
	HPC				20 6322	20 6342		20 6322	20 6342			
mm	TiAlN	TiAlN	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
1/0,1	XXX	XXX	1.5	0.1	10	20	0.85	50	75	3	0.005	0.005
1/0,2	XXX	XXX	1.5	0.2	10	20	0.85	50	75	3	0.005	0.005
2/0,2	XXX	XXX	2.5	0.2	12	25	1.8	50	75	3	0.005	0.005
2/0,3	XXX	XXX	2.5	0.3	12	25	1.8	50	75	3	0.005	0.005
2/0,5	XXX	XXX	2.5	0.5	12	25	1.8	50	75	3	0.005	0.005
3/0,25	XXX	XXX	4	0.25	14	32	2.7	50	75	3	0.019	0.019
3/0,3	XXX	XXX	4	0.3	14	32	2.7	50	75	3	0.019	0.019
3/0,5	XXX	XXX	4	0.5	14	32	2.7	50	75	3	0.019	0.019
3/1,0	XXX	XXX	4	1	14	32	2.7	50	75	3	0.019	0.019
4/0,2	XXX	XXX	5	0.2	16	36	3.7	50	75	4	0.019	0.019
4/0,25	XXX	XXX	5	0.25	16	36	3.7	50	75	4	0.019	0.019
4/0,4	XXX	XXX	5	0.4	16	36	3.7	50	75	4	0.019	0.019
4/0,5	XXX	XXX	5	0.5	16	36	3.7	50	75	4	0.019	0.019
4/1,0	XXX	XXX	5	1	16	36	3.7	50	75	4	0.019	0.019
5/0,25	XXX	XXX	6	0.25	18	40	4.6	54	75	5	0.048	0.048
5/0,5	XXX	XXX	6	0.5	18	40	4.6	54	75	5	0.048	0.048
5/1,0	XXX	XXX	6	1	18	40	4.6	54	75	5	0.048	0.048
6/0,25	XXX	XXX	7	0.25	21	44	5.5	57	80	6	0.048	0.048
6/0,5	XXX	XXX	7	0.5	21	44	5.5	57	80	6	0.048	0.048
6/0,8	XXX	–	7	0.8	21	–	5.5	57	–	6	0.048	0.048
6/1,0	XXX	XXX	7	1	21	44	5.5	57	80	6	0.048	0.048
6/1,5	XXX	XXX	7	1.5	21	44	5.5	57	80	6	0.048	0.048
6/2,0	XXX	–	7	2	21	–	5.5	57	–	6	0.048	0.048
8/0,25	XXX	XXX	9	0.25	27	54	7.4	63	100	8	0.06	0.06
8/0,5	XXX	XXX	9	0.5	27	54	7.4	63	100	8	0.06	0.06
8/0,8	XXX	XXX	9	0.8	27	54	7.4	63	100	8	0.06	0.06
8/1,0	XXX	XXX	9	1	27	54	7.4	63	100	8	0.06	0.06
8/1,5	XXX	XXX	9	1.5	27	54	7.4	63	100	8	0.06	0.06
8/2,0	XXX	XXX	9	2	27	54	7.4	63	100	8	0.06	0.06
8/2,5	XXX	–	9	2.5	27	–	7.4	63	–	8	0.06	0.06
8/3,0	XXX	XXX	9	3	27	54	7.4	63	100	8	0.06	0.06
10/0,25	XXX	XXX	11	0.25	32	60	9.2	72	100	10	0.07	0.07
10/0,5	XXX	XXX	11	0.5	32	60	9.2	72	100	10	0.07	0.07
10/0,8	XXX	XXX	11	0.8	32	60	9.2	72	100	10	0.07	0.07
10/1,0	XXX	XXX	11	1	32	60	9.2	72	100	10	0.07	0.07
10/1,5	XXX	XXX	11	1.5	32	60	9.2	72	100	10	0.07	0.07
10/2,0	XXX	XXX	11	2	32	60	9.2	72	100	10	0.07	0.07
10/3,0	XXX	XXX	11	3	32	60	9.2	72	100	10	0.07	0.07
10/3,5	XXX	–	11	3.5	32	–	9.2	72	–	10	0.07	0.07
12/0,5	XXX	XXX	12	0.5	38	75	11	83	120	12	0.08	0.08
12/1,0	XXX	XXX	12	1	38	75	11	83	120	12	0.08	0.08
12/1,5	XXX	XXX	12	1.5	38	75	11	83	120	12	0.08	0.08
12/2,0	XXX	XXX	12	2	38	75	11	83	120	12	0.08	0.08
12/3,0	XXX	XXX	12	3	38	75	11	83	120	12	0.08	0.08
16/2,0	XXX	XXX	16	2	44	92	15	92	150	16	0.09	0.09
16/3,0	XXX	XXX	16	3	44	92	15	92	150	16	0.09	0.09

Solid carbide | Standard | Type H | e8 | 30° | a_e 0.2×D | a_e 0.05×D | h6 DIN 6535 HA | HPC

4 | 5 | 6

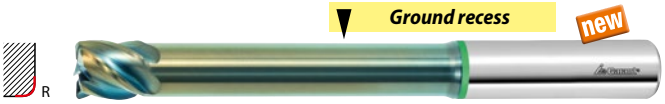
Garant

GARANT Master Steel HPC solid carbide torus cutter

HPC milling cutter with **newly developed high-performance coating.** For **outstanding tool life** and **optimum metal removal rates** in a range of materials.
With **double relief ground side clearance angle.**
Tolerance: Corner radius **RS_1**
Radius size 0.1 mm – 1 mm: **RS_1 = ± 0.003 mm.**
Radius size> 1.0 mm – 1 mm: **RS_1 = ± 0.005 mm.**

Application: Especially for **high speed machining** in **mould and tool making** for **copy milling.**
Excellent results for **dry milling.**

20 6333



20 6335

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	K						
20 6333				200	170	120	85	70	40					95	85		110	●		●	○	●	●
20 6335				180	150	110	75	65	35					90	80		100	●		●	○	●	●

∅ e8 D_c / RS_1	11X 20 6333	11X 20 6335	No. of teeth Z	L_s	RS_1	L_4		∅ $D_{4\,min}$	∅ $D_{4\,max}$	L_{tot}			< 1100 N f_z	< 1100 N f_z
	GARANT Master Steel solid carbide torus cutter HPC					20 6333	20 6335			20 6333	20 6335			
mm	TiAlN	TiAlN		mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
1/0,1	XXX	–	4	1.5	0.1	10	–	0.85	0.95	50	–	3	0.005	0.006
1/0,2	XXX	–	4	1.5	0.2	10	–	0.85	0.95	50	–	3	0.005	0.006
2/0,2	XXX	XXX	4	2.5	0.2	12	25	1.8	1.95	50	75	3	0.008	0.01
2/0,3	XXX	XXX	4	2.5	0.3	12	25	1.8	1.95	50	75	3	0.008	0.01
2/0,5	XXX	XXX	4	2.5	0.5	12	25	1.8	1.95	50	75	3	0.008	0.01
3/0,3	XXX	XXX	4	4	0.3	14	32	2.7	2.9	50	75	3	0.01	0.012
3/0,5	XXX	XXX	4	4	0.5	14	32	2.7	2.9	50	75	3	0.01	0.012
3/1,0	XXX	XXX	4	4	1	14	32	2.7	2.9	50	75	3	0.01	0.012
4/0,4	XXX	XXX	5	5	0.4	16	36	3.7	3.9	50	75	4	0.015	0.018
4/0,5	XXX	XXX	5	5	0.5	16	36	3.7	3.9	50	75	4	0.015	0.018
4/1,0	XXX	XXX	5	5	1	16	36	3.7	3.9	50	75	4	0.015	0.018
5/0,5	XXX	XXX	5	6	0.5	18	40	4.6	4.9	54	75	5	0.018	0.02
5/1,0	XXX	XXX	5	6	1	18	40	4.6	4.9	54	75	5	0.018	0.02
6/0,5	XXX	XXX	5	7	0.5	21	44	5.5	5.9	57	83	6	0.022	0.025
6/1,0	XXX	XXX	5	7	1	21	44	5.5	5.9	57	83	6	0.022	0.025
6/1,5	XXX	XXX	5	7	1.5	21	44	5.5	5.9	57	83	6	0.022	0.025
8/0,5	XXX	XXX	5	9	0.5	27	54	7.4	7.9	63	100	8	0.027	0.03
8/1,0	XXX	XXX	5	9	1	27	54	7.4	7.9	63	100	8	0.027	0.03
8/1,5	XXX	–	5	9	1.5	27	–	7.4	7.9	63	–	8	0.027	0.03
8/2,0	XXX	XXX	5	9	2	27	54	7.4	7.9	63	100	8	0.027	0.03
10/0,5	XXX	XXX	5	11	0.5	32	60	9.2	9.9	72	100	10	0.035	0.04
10/1,0	XXX	XXX	5	11	1	32	60	9.2	9.9	72	100	10	0.035	0.04
10/1,5	XXX	–	5	11	1.5	32	–	9.2	9.9	72	–	10	0.035	0.04
10/2,0	XXX	XXX	5	11	2	32	60	9.2	9.9	72	100	10	0.035	0.04
12/0,5	XXX	XXX	5	12	0.5	38	75	11	11.8	83	119	12	0.045	0.05
12/1,0	XXX	XXX	5	12	1	38	75	11	11.8	83	119	12	0.045	0.05
12/1,5	XXX	–	5	12	1.5	38	–	11	11.8	83	–	12	0.045	0.05
12/2,0	XXX	XXX	5	12	2	38	75	11	11.8	83	119	12	0.045	0.05
16/1,0	–	XXX	6	16	1	–	92	15	15.8	–	150	16	0.06	0.07
16/2,0	–	XXX	6	16	2	–	92	15	15.8	–	150	16	0.06	0.07

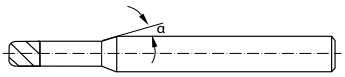
Solid carbide | Standard | Type H | 0 –0.02 | 4 | 30° | a_e 0.05×D | a_e 0.05×D | h6 DIN 6535 HA | HPC

Garant Solid carbide torus cutter HPC

GARANT Diabolo 70:
Special solid carbide substrate with extremely high tensile strength combined with **outstanding wear resistance** for optimum process reliability.
Newly developed **nano-crystalline high-tech coating for hard milling up to 70 HRC.** Very suitable for **continuous use** in tool and mould making.
Sizes 2 – 5: **Recess angle α = 15°.**
Tolerances:
- Corner radius: **RS_1 = ±0.01 mm.**

Application: Due to the **special hard geometry** ideal for use on hardened materials from 60 HRC to 70 HRC.

20 6323



Size 2 - 5

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	Graphite GRP CRP	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	N						
20 6323										150	110	90	80								●	●	

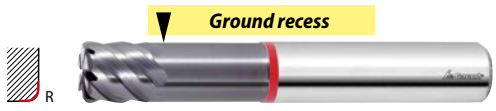
∅ D_c / RS_1	11X	20 6323	L_s	RS_1	L_4	∅ D_4	L_{tot}		< 70 HRC f_z	< 70 HRC f_z
		Solid carbide torus cutter HPC								
mm		TiAlN	mm	mm	mm	mm	mm	mm	mm	mm
2/0,2		XXX	2	0.2	10	1.9	58	6	0.005	0.005
2/0,5		XXX	2	0.5	10	1.9	58	6	0.005	0.005
3/0,3		XXX	3	0.3	14	2.9	58	6	0.019	0.019
3/0,5		XXX	3	0.5	14	2.9	58	6	0.019	0.019
4/0,5		XXX	4	0.5	16	3.9	58	6	0.019	0.019
5/0,5		XXX	5	0.5	16	4.9	58	6	0.048	0.048
6/0,5		XXX	6	0.5	18	5.85	58	6	0.048	0.048
6/1,0		XXX	6	1	18	5.85	58	6	0.048	0.048
8/0,5		XXX	8	0.5	24	7.85	64	8	0.06	0.06
8/1,0		XXX	8	1	24	7.85	64	8	0.06	0.06
10/0,5		XXX	10	0.5	30	9.7	73	10	0.07	0.07
10/1,0		XXX	10	1	30	9.7	73	10	0.07	0.07
12/1,0		XXX	12	1	26	11.7	74	12	0.08	0.08
12/2,0		XXX	12	2	26	11.7	74	12	0.08	0.08

Solid carbide | Standard | Type H | 0 –0.02 | 6 | 45° | a_e 0.05×D | a_e 0.05×D | h6 DIN 6535 HA | HPC

Garant Solid carbide torus cutter HPC

GARANT Diabolo 70:
Special solid carbide substrate with extremely high tensile strength combined with **outstanding wear resistance** for optimum process reliability.
Newly developed **nano-crystalline high-tech coating for hard milling up to 70 HRC.** Very suitable **for continuous use** in tool and mould making.
Tolerances:
- Corner radius: **RS_1 = ±0.02 mm.**

Application: Due to the **special hard geometry** ideal for use on hardened materials from 60 HRC to 70 HRC.
For profile milling as a **finishing operation.**
(Plunge milling only to shallow depths).



20 6324

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	Graphite GRP CRP	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	N						
20 6324										150	110	90	80								●	●	

∅ D_c / RS_1	11X	20 6324	L_s	RS_1	L_4	∅ D_4	L_{tot}		< 70 HRC f_z	< 70 HRC f_z
		Solid carbide torus cutter HPC								
mm		TiAlN	mm	mm	mm	mm	mm	mm	mm	mm
6/0,5		XXX	6	0.5	18	5.85	50	6	0.048	0.048
8/0,5		XXX	8	0.5	24	7.85	60	8	0.06	0.06
10/1,0		XXX	10	1	30	9.7	70	10	0.07	0.07
12/1,0		XXX	12	1	36	11.7	75	12	0.08	0.08

Solid carbide | Standard | Type N | HPC | a_e 0.3×D | a_e 0.05×D

Solid carbide torus cutter HPC

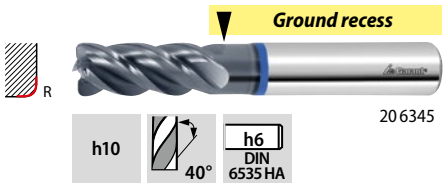
Dimensions similar to DIN 6527.
HPC milling cutter with **newly developed high-performance coating.**
For **outstanding tool life** and **optimum metal removal rate** in a very wide range of stainless steels.

20 6348 – For use at **high cutting speeds**, particularly suitable even for steels up to approx. 1100 N/mm².

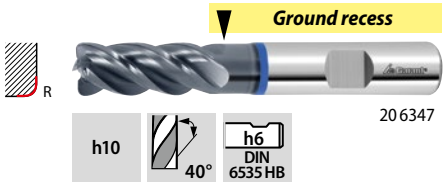
20 6345/6347 – Can be used at **high cutting speeds**, particularly suitable even for TOOLOX®.

Advantage:

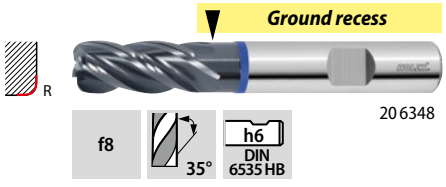
20 6345/6347 – **Greater oxidation resistance and high-temperature hardness.**



20 6345



20 6347



20 6348

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	TOOLOX® 33 HRC	TOOLOX® 44 HRC	INOX < 900 N	INOX > 900 N	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	H	H	M	M						
20 6345/6347				250	230	200	180	170						115	80	110	90	○		●	●	○	●
20 6348				240	220	180	180	150						115	80	100	85	○		●	○	○	○

$\varnothing D_c$ / RS_1	11X 20 6345 / 11X 20 6347	12X 20 6348	L_3		RS_1	L_4		$\varnothing D_4$		L_{tot}		INOX > 900 N f_z	INOX > 900 N f_z
	GARANT Master INOX solid carbide torus cutter	HOLEX Pro INOX solid carbide torus cutter											
	HPC DIN 6535 HA	HPC DIN 6535 HB	HPC DIN 6535 HB										
			20 6345 20 6347	20 6348		20 6345 20 6347	20 6348	20 6345 20 6347	20 6348				
mm	TiAlN	TiAlN	AlCrN	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
3/0,3	XXX	XXX	–	8	–	0.3	14	–	2.9	–	57	6	0.014	0.018
3/0,5	XXX	XXX	–	8	–	0.5	14	–	2.9	–	57	6	0.013	0.016
4/0,4	XXX	XXX	XXX	11	11	0.4	16	17	3.6	3.8	57	6	0.016	0.02
4/0,5	XXX	XXX	XXX	11	11	0.5	16	17	3.6	3.8	57	6	0.014	0.018
4/1,0	XXX	XXX	XXX	11	11	1	16	17	3.6	3.8	57	6	0.013	0.016
5/0,5	XXX	XXX	XXX	13	13	0.5	18	19	4.6	4.8	57	6	0.026	0.032
5/1,0	XXX	XXX	XXX	13	13	1	18	19	4.6	4.8	57	6	0.023	0.03
6/0,5	XXX	XXX	XXX	13	13	0.5	21	19	5.5	5.8	57	6	0.033	0.04
6/1,0	XXX	XXX	XXX	13	13	1	21	19	5.5	5.8	57	6	0.03	0.037
6/1,5	XXX	XXX	XXX	13	13	1.5	21	19	5.5	5.8	57	6	0.026	0.032
8/0,5	XXX	XXX	XXX	16	21	0.5	27	25	7.5	7.7	63	8	0.04	0.048
8/1,0	XXX	XXX	XXX	16	21	1	27	25	7.5	7.7	63	8	0.035	0.043
8/1,5	XXX	XXX	XXX	16	21	1.5	27	25	7.5	7.7	63	8	0.03	0.037
8/2,0	XXX	XXX	XXX	16	21	2	27	25	7.5	7.7	63	8	0.026	0.032
8/2,5	XXX	XXX	XXX	16	21	2.5	27	25	7.5	7.7	63	8	0.024	0.03
8/3,0	XXX	XXX	XXX	16	21	3	27	25	7.5	7.7	63	8	0.022	0.028
10/0,5	XXX	XXX	XXX	22	22	0.5	32	30	9.5	9.7	72	10	0.052	0.064
10/1,0	XXX	XXX	XXX	22	22	1	32	30	9.5	9.7	72	10	0.048	0.06
10/1,5	XXX	XXX	XXX	22	22	1.5	32	30	9.5	9.7	72	10	0.043	0.053
10/2,0	XXX	XXX	XXX	22	22	2	32	30	9.5	9.7	72	10	0.04	0.048
10/2,5	XXX	XXX	XXX	22	22	2.5	32	30	9.5	9.7	72	10	0.037	0.044
10/3,0	XXX	XXX	XXX	22	22	3	32	30	9.5	9.7	72	10	0.035	0.04
12/0,5	XXX	XXX	XXX	26	26	0.5	38	36	11.5	11.6	83	12	0.065	0.08
12/1,0	XXX	XXX	XXX	26	26	1	38	36	11.5	11.6	83	12	0.06	0.075
12/1,5	XXX	XXX	XXX	26	26	1.5	38	36	11.5	11.6	83	12	0.058	0.072
12/2,0	XXX	XXX	XXX	26	26	2	38	36	11.5	11.6	83	12	0.056	0.07
12/2,5	XXX	XXX	XXX	26	26	2.5	38	36	11.5	11.6	83	12	0.055	0.068
12/3,0	XXX	XXX	XXX	26	26	3	38	36	11.5	11.6	83	12	0.054	0.066
12/4,0	XXX	XXX	XXX	26	26	4	38	36	11.5	11.6	83	12	0.052	0.064
16/0,5	XXX	XXX	XXX	32	36	0.5	44	42	15	15.5	92	16	0.078	0.096
16/1,0	XXX	XXX	XXX	32	36	1	44	42	15	15.5	92	16	0.078	0.096
16/2,0	XXX	XXX	XXX	32	36	2	44	42	15	15.5	92	16	0.072	0.088
16/2,5	XXX	XXX	XXX	32	36	2.5	44	42	15	15.5	92	16	0.07	0.085
16/3,0	XXX	XXX	XXX	32	36	3	44	42	15	15.5	92	16	0.067	0.083
16/4,0	XXX	XXX	XXX	32	36	4	44	42	15	15.5	92	16	0.065	0.08
20/1,0	XXX	XXX	XXX	38	41	1	54	52	19	19.5	104	20	0.09	0.13
20/2,0	XXX	XXX	XXX	38	41	2	54	52	19	19.5	104	20	0.085	0.105
20/3,0	XXX	XXX	XXX	38	41	3	54	52	19	19.5	104	20	0.082	0.1
20/4,0	XXX	XXX	XXX	38	41	4	54	52	19	19.5	104	20	0.078	0.096

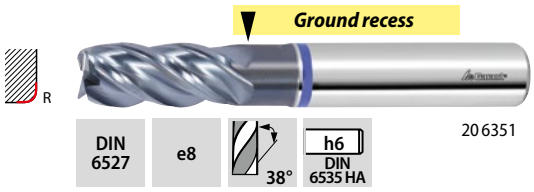
Solid carbide | Type N | HPC

Solid carbide torus cutter HPC

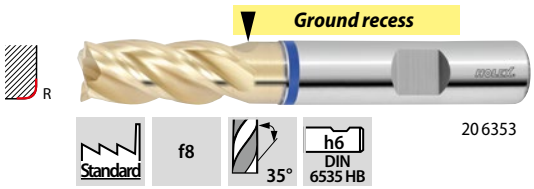
20 6351 – Dimensions to DIN 6527 and 38° flutes.
Tolerance: Corner radius **RS_1 = ±0.005 mm.**

20 6353 – Dimensions to factory standard and 35° spiral.
Special TiSi coating.
With balancing speed G 2.5.

Note: **NEW GENERATION AVAILABLE!**
20 6351 – **Recommended successor product is No. 206345**
20 6353 – **Recommended successor product is No. 206348**



20 6351



20 6353

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	TOOLOX® 33 HRC	TOOLOX® 44 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	H	M	M	S						
20 6351				250	230	200	180	170					115	80	90	80	50	○		●	●	○	○
20 6353				250	230	200	180	170					115	80	90	80		○		●	●	○	○

∅ D_c / RS_1	11X 20 6351 Garant	12X 20 6353 HOLEX	L_s		RS_1	L_4		∅ D_4		L_{tot}		INOX > 900 N f_z	INOX > 900 N f_z
	Solid carbide torus cutter												
	HPC DIN 6535 HA	HPC DIN 6535 HB	20 6351	20 6353		20 6351	20 6353	20 6351	20 6353				
mm	TiAlN	TiSi	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
4/0,4	XXX	–	12	–	0.4	16	–	3.6	–	57	6	0.016	0.02
4/0,5	XXX	XXX	12	11	0.5	16	17	3.6	3.8	57	6	0.014	0.018
4/1,0	XXX	–	12	–	1	16	–	3.6	–	57	6	0.013	0.016
5/0,5	XXX	–	13	–	0.5	18	–	4.6	–	57	6	0.026	0.032
5/1,0	XXX	XXX	13	13	1	18	19	4.6	4.8	57	6	0.023	0.03
6/0,5	XXX	XXX	13	13	0.5	21	19	5.5	5.8	57	6	0.033	0.04
6/1,0	XXX	XXX	13	13	1	21	19	5.5	5.8	57	6	0.03	0.037
6/1,5	XXX	–	13	–	1.5	21	–	5.5	–	57	6	0.026	0.032
8/0,5	XXX	XXX	16	21	0.5	27	25	7.5	7.7	63	8	0.04	0.048
8/1,0	XXX	XXX	16	21	1	27	25	7.5	7.7	63	8	0.035	0.043
8/1,5	XXX	–	16	–	1.5	27	–	7.5	–	63	8	0.03	0.037
8/2,0	XXX	–	16	–	2	27	–	7.5	–	63	8	0.026	0.032
8/2,5	XXX	–	16	–	2.5	27	–	7.5	–	63	8	0.024	0.03
8/3,0	XXX	–	16	–	3	27	–	7.5	–	63	8	0.022	0.028
10/0,5	XXX	XXX	22	22	0.5	32	30	9.5	9.7	72	10	0.052	0.064
10/1,0	XXX	XXX	22	22	1	32	30	9.5	9.7	72	10	0.048	0.06
10/1,5	XXX	–	22	–	1.5	32	–	9.5	–	72	10	0.043	0.053
10/2,0	XXX	XXX	22	22	2	32	30	9.5	9.7	72	10	0.04	0.048
10/2,5	XXX	–	22	–	2.5	32	–	9.5	–	72	10	0.037	0.044
10/3,0	XXX	–	22	–	3	32	–	9.5	–	72	10	0.035	0.04
12/0,5	XXX	XXX	26	26	0.5	38	36	11.5	11.6	83	12	0.065	0.08
12/1,0	XXX	XXX	26	26	1	38	36	11.5	11.6	83	12	0.06	0.075
12/1,5	XXX	–	26	–	1.5	38	–	11.5	–	83	12	0.058	0.072
12/2,0	XXX	XXX	26	26	2	38	36	11.5	11.6	83	12	0.056	0.07
12/2,5	XXX	–	26	–	2.5	38	–	11.5	–	83	12	0.055	0.068
12/3,0	XXX	–	26	–	3	38	–	11.5	–	83	12	0.054	0.066
12/4,0	XXX	XXX	26	26	4	38	36	11.5	11.6	83	12	0.052	0.064
16/0,5	XXX	–	32	–	0.5	44	–	15	–	92	16	0.078	0.096
16/1,0	XXX	XXX	32	36	1	44	42	15	15.5	92	16	0.078	0.096
16/2,0	XXX	XXX	32	36	2	44	42	15	15.5	92	16	0.072	0.088
16/2,5	XXX	–	32	–	2.5	44	–	15	–	92	16	0.07	0.085
16/3,0	XXX	–	32	–	3	44	–	15	–	92	16	0.067	0.083
16/4,0	XXX	XXX	32	36	4	44	42	15	15.5	92	16	0.065	0.08
20/1,0	XXX	XXX	38	41	1	55	52	19	19.5	104	20	0.09	0.13
20/2,0	XXX	XXX	38	41	2	55	52	19	19.5	104	20	0.085	0.105
20/3,0	XXX	–	38	–	3	55	–	19	–	104	20	0.082	0.1
20/4,0	XXX	XXX	38	41	4	55	52	19	19.5	104	20	0.078	0.096

Solid carbide | DIN 6527 | Type N | HPC | h6 DIN 6535 HA | h6 DIN 6535 HB

Garant® HPC solid carbide torus cutter, GARANT Master Titan HPC solid carbide torus cutter

20 6358 – **Special coating** for the best tool life and high metal removal rate.
With balancing speed G2.5.
For milling **Ni-based alloys,** with 35° helix angle.

20 6364 – Dimensions to manufacturer's standard and 50° flutes.
Double relief ground side clearance angle.

Application:

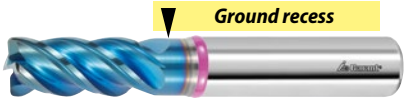
20 6364 – For milling **titanium and titanium alloys;** with very smooth cutting action for optimum tool life and top metal removal rate.

a_e 0.2×D | f8 | 35° | G 2.5 | n_{max} | R

20 6358

Ground recess

e8 | 40° | a_e 0.3×D | R



20 6364

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	Inconel®	Graphite GRP CRP					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	S	N					
20 6358																	35		●				
20 6364																60			●				

∅ D_c / RS_1	11X	20 6358	11Z	20 6364	L_3		RS_1	L_4	∅ D_4	L_{tot}		Ti > 850 N f_z	Ti > 850 N f_z	Inconel® f_z
		Solid carbide torus cutter		GARANT Master Titan solid carbide torus cutter										
		HPC DIN 6535 HB		HPC DIN 6535 HA	20 6358	20 6364		20 6364	20 6364			20 6364	20 6364	20 6358
mm		TiAlN		TiAlN	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
4/0,5		XXX		XXX	11	11	0.5	16	3.8	57	6	0.018	0.02	0.013
5/1,0		XXX		XXX	13	13	1	18	4.8	57	6	0.022	0.03	0.019
6/0,5		XXX		XXX	13	13	0.5	20	5.8	57	6	0.026	0.03	0.026
6/1,0		XXX		XXX	13	13	1	20	5.8	57	6	0.026	0.03	0.024
8/0,5		–		XXX	–	19	0.5	25	7.7	63	8	0.034	0.046	–
8/1,0		XXX		XXX	21	19	1	25	7.7	63	8	0.034	0.046	0.026
10/0,5		XXX		XXX	22	22	0.5	32	9.7	72	10	0.042	0.055	0.038
10/1,0		XXX		XXX	22	22	1	32	9.7	72	10	0.042	0.055	0.034
10/2,0		XXX		XXX	22	22	2	32	9.7	72	10	0.042	0.055	0.028
12/0,5		XXX		XXX	26	26	0.5	38	11.6	83	12	0.05	0.07	0.051
12/1,0		XXX		XXX	26	26	1	38	11.6	83	12	0.05	0.07	0.048
12/2,0		–		XXX	–	26	2	38	11.6	83	12	0.05	0.07	–
12/2,5		XXX		XXX	26	26	2.5	38	11.6	83	12	0.05	0.07	0.045
16/1,0		XXX		XXX	36	32	1	44	15.5	92	16	0.065	0.08	0.058
16/2,0		–		XXX	–	32	2	44	15.5	92	16	0.065	0.08	–
16/2,5		XXX		XXX	36	32	2.5	44	15.5	92	16	0.065	0.08	0.05
16/4,0		–		XXX	–	32	4	44	15.5	92	16	0.065	0.08	–
20/1,0		XXX		XXX	41	41	1	54	19.5	104	20	0.08	0.1	0.077
20/2,0		–		XXX	–	41	2	54	19.5	104	20	0.08	0.1	–
20/2,5		XXX		XXX	41	41	2.5	54	19.5	104	20	0.08	0.1	0.07
20/4,0		XXX		–	41	–	4	–	–	104	20	–	–	0.062

Solid carbide | DIN 6527 | Type N | f8 | 50° | a_e 0.2×D | a_e 0.05×D | h6 DIN 6535 HA | G 2.5 | n_{max} | HPC

Garant® Solid carbide torus cutter HPC

Special coating for the best tool life and high metal removal rates.
For milling **Ni-based alloys**.

R

20 6510

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	Inconel®	Graphite GRP CRP					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	S	N					
20 6510																	35		●				

∅ f8 D_c / RS_1	11X	20 6510	No. of teeth Z	L_3	RS_1	L_{tot}		Inconel® f_z
		Solid carbide torus cutter						
		HPC						
mm		TiAlN		mm	mm	mm	mm	mm
6/0,5		XXX	6	16	0.5	57	6	0.026
6/1,0		XXX	6	16	1	57	6	0.024
8/0,5		XXX	6	19	0.5	63	8	0.029
8/1,0		XXX	6	19	1	63	8	0.026
10/0,5		XXX	6	25	0.5	72	10	0.038
10/1,0		XXX	6	25	1	72	10	0.034
12/0,5		XXX	6	28	0.5	83	12	0.051
12/1,0		XXX	6	28	1	83	12	0.048
16/1,0		XXX	8	36	1	92	16	0.058
16/2,0		XXX	8	36	2	92	16	0.052
20/1,0		XXX	8	41	1	104	20	0.077

Solid carbide | Type N | 4 | 38° | ≠ | ≠ | | | a_e 0.3×D | h6 DIN 6535 HB | HPC

GARANT Master Steel / HOLEX Pro Steel solid carbide torus cutter

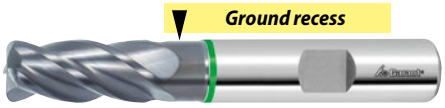
Dimensions to DIN 6527 and 38° flutes.

20 6357 – Tolerance: Corner radius **RS_1 = ±0.03 mm.**

20 6354/6359 – Tolerance: Corner radius **RS_1 = ±0.01 mm.**

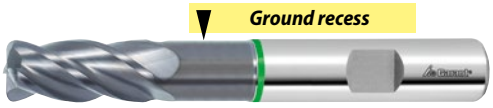
Advantage: HPC milling cutters will with various corner radii for all radial transitions.
Optimised flute form, eccentric relief ground, wide chip space.

DIN 6527 | f8 | R



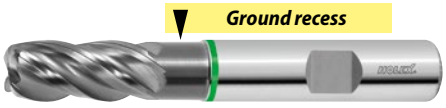
20 6354

Standard | f8 | R



20 6359

DIN 6527 | 0 −0.03 | R



20 6357

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	K						
20 6354/6359				260	240	190	180	150						80	70		250	●		●	○	●	●
20 6357				260	240	180	160							80			250	●		●	○	●	●

$\varnothing D_C$ / RS_1	11X 20 6354 / 11X 20 6359 GARANT Master Steel solid carbide torus cutter HPC		12X 20 6357 HOLEX Pro Steel solid carbide torus cutter	L_s		RS_1	L_4			$\varnothing D_4$			L_{tot}			< 900 N f_z	< 900 N f_z
				20 6354 20 6359	20 6357		20 6354	20 6359	20 6357	20 6354	20 6359	20 6357	20 6354 20 6357	20 6359			
mm	TiAlN	TiAlN	TiAlN	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
4/0,4	XXX	–	–	11	–	0.4	–	–	–	–	–	–	57	–	6	0.02	0.025
4/0,5	XXX	XXX	XXX	11	11	0.5	–	22	15	–	3.8	3.8	57	62	6	0.02	0.025
4/1,0	XXX	XXX	XXX	11	11	1	–	22	15	–	3.8	3.8	57	62	6	0.02	0.025
5/0,5	XXX	XXX	XXX	13	13	0.5	–	24	17	–	4.8	4.8	57	62	6	0.03	0.04
5/1,0	XXX	XXX	XXX	13	13	1	–	24	17	–	4.8	4.8	57	62	6	0.03	0.04
6/0,5	XXX	XXX	XXX	13	13	0.5	20	25	21	5.8	5.8	5.5	57	62	6	0.04	0.05
6/1,0	XXX	XXX	XXX	13	13	1	20	25	21	5.8	5.8	5.5	57	62	6	0.04	0.05
6/1,5	XXX	–	XXX	13	13	1.5	20	–	21	5.8	–	5.5	57	–	6	0.04	0.05
6/2,0	XXX	XXX	XXX	13	13	2	20	25	21	5.8	5.8	5.5	57	62	6	0.04	0.05
8/0,5	XXX	–	XXX	21	19	0.5	25	–	27	7.8	–	7.5	63	–	8	0.05	0.06
8/1,0	XXX	XXX	XXX	21	19	1	25	30	27	7.8	7.7	7.5	63	68	8	0.05	0.06
8/1,5	XXX	–	XXX	21	19	1.5	25	–	27	7.8	–	7.5	63	–	8	0.05	0.06
8/2,0	XXX	XXX	XXX	21	19	2	25	30	27	7.8	7.7	7.5	63	68	8	0.05	0.06
8/2,5	XXX	–	–	21	–	2.5	25	–	–	7.8	–	–	63	–	8	0.05	0.06
8/3,0	XXX	–	–	21	–	3	25	–	–	7.8	–	–	63	–	8	0.05	0.06
10/0,5	XXX	XXX	XXX	22	22	0.5	30	38	32	9.8	9.7	9.5	72	80	10	0.06	0.08
10/1,0	XXX	XXX	XXX	22	22	1	30	38	32	9.8	9.7	9.5	72	80	10	0.06	0.08
10/1,5	XXX	XXX	XXX	22	22	1.5	30	38	32	9.8	9.7	9.5	72	80	10	0.06	0.08
10/2,0	XXX	XXX	XXX	22	22	2	30	38	32	9.8	9.7	9.5	72	80	10	0.06	0.08
10/2,5	XXX	–	–	22	–	2.5	30	–	–	9.8	–	–	72	–	10	0.06	0.08
10/3,0	XXX	XXX	–	22	–	3	30	38	–	9.8	9.7	–	72	80	10	0.06	0.08
12/0,5	XXX	XXX	XXX	26	26	0.5	36	46	38	11.8	11.6	11.5	83	93	12	0.07	0.09
12/1,0	XXX	XXX	XXX	26	26	1	36	46	38	11.8	11.6	11.5	83	93	12	0.07	0.09
12/1,5	XXX	XXX	XXX	26	26	1.5	36	46	38	11.8	11.6	11.5	83	93	12	0.07	0.09
12/2,0	XXX	XXX	XXX	26	26	2	36	46	38	11.8	11.6	11.5	83	93	12	0.07	0.09
12/2,5	XXX	–	–	26	–	2.5	36	–	–	11.8	–	–	83	–	12	0.07	0.09
12/3,0	XXX	XXX	XXX	26	26	3	36	46	38	11.8	11.6	11.5	83	93	12	0.07	0.09
12/4,0	XXX	–	–	26	–	4	36	–	–	11.8	–	–	83	–	12	0.07	0.09
16/0,5	XXX	XXX	XXX	36	32	0.5	42	58	44	15.8	15.5	15.5	92	108	16	0.08	0.1
16/1,0	XXX	XXX	XXX	36	32	1	42	58	44	15.8	15.5	15.5	92	108	16	0.08	0.1
16/2,0	XXX	XXX	XXX	36	32	2	42	58	44	15.8	15.5	15.5	92	108	16	0.08	0.1
16/2,5	XXX	–	–	36	–	2.5	42	–	–	15.8	–	–	92	–	16	0.08	0.1
16/3,0	XXX	–	–	36	–	3	42	–	–	15.8	–	–	92	–	16	0.08	0.1
16/4,0	XXX	XXX	XXX	36	32	4	42	58	44	15.8	15.5	15.5	92	108	16	0.08	0.1
20/1,0	XXX	XXX	XXX	41	38	1	52	74	54	19.8	19.5	19.5	104	126	20	0.1	0.13
20/2,0	XXX	XXX	XXX	41	38	2	52	74	54	19.8	19.5	19.5	104	126	20	0.1	0.13
20/3,0	XXX	–	–	41	–	3	52	–	–	19.8	–	–	104	–	20	0.1	0.13
20/4,0	XXX	XXX	XXX	41	38	4	52	74	54	19.8	19.5	19.5	104	126	20	0.1	0.13

Solid carbide | Type H | e8 | a_e 0.05×D | a_e 0.05×D | h6 DIN 6535 HA | HPC

6 | 8 | 10

Garant Diabolo solid carbide torus cutter HPC

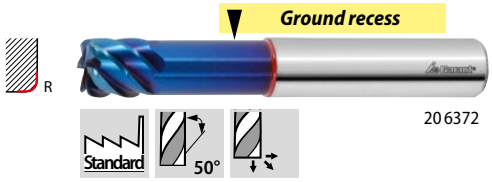
GARANT Diabolo:
Special geometry, coating and carbide for hard machining.
Dimensions to DIN 6527 and 45° flutes.

20 6372 – Without dynamic twist pitch.
Without dynamic twist pitch.

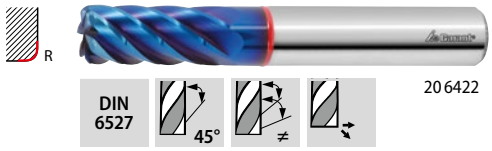
20 6422/6442 – Tolerance: Corner radius **RS_1 = ± 0.005 mm.**

Application:

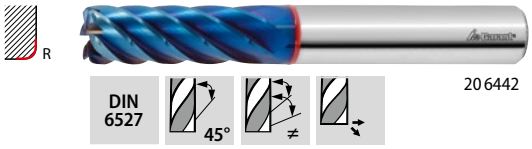
20 6422/6442 – **For peripheral milling** as a **finishing operation** (plunge milling only to shallow depths).



20 6372



20 6422



20 6442

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 50 HRC	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	Graphite GRP CRP					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	H	M	M	S	N					
20 6372								200	190	170	150	110							○	○	●	●	
20 6422								170	170	170	145	100							○	○	●	●	
20 6442								150	150	150	125	80							○	○	●	●	

Ø e8 D_c / RS_1	11X 20 6372	11X 20 6422	11X 20 6442	No. of teeth Z		L_s			RS_1	L_4	Ø D_4	L_{tot}			< 65 HRC f_z	< 65 HRC f_z
	Diabolo solid carbide torus cutter HPC			20 6372	20 6422 20 6442	20 6372	20 6422	20 6442		20 6372	20 6372	20 6372 20 6422	20 6442		20 6422 20 6442	20 6372
mm	TiAlN	TiAlN	TiAlN			mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
6/0,5	XXX	XXX	XXX	6	6	7	16	18	0.5	21	5.5	57	65	6	0.015	0.048
6/0,8	XXX	–	–	6	–	7	–	–	0.8	21	5.5	57	–	6	–	0.048
6/1,0	XXX	XXX	XXX	6	6	7	16	18	1	21	5.5	57	65	6	0.015	0.048
6/1,5	XXX	–	–	6	–	7	–	–	1.5	21	5.5	57	–	6	–	0.048
8/0,5	XXX	XXX	XXX	6	6	9	19	24	0.5	27	7.4	63	70	8	0.018	0.06
8/0,8	XXX	–	–	6	–	9	–	–	0.8	27	7.4	63	–	8	–	0.06
8/1,0	XXX	XXX	XXX	6	6	9	19	24	1	27	7.4	63	70	8	0.018	0.06
8/1,5	XXX	–	–	6	–	9	–	–	1.5	27	7.4	63	–	8	–	0.06
8/2,0	XXX	–	–	6	–	9	–	–	2	27	7.4	63	–	8	–	0.06
8/3,0	XXX	–	–	6	–	9	–	–	3	27	7.4	63	–	8	–	0.06
10/0,5	XXX	XXX	XXX	6	6	11	25	30	0.5	32	9.2	72	85	10	0.019	0.07
10/0,8	XXX	–	–	6	–	11	–	–	0.8	32	9.2	72	–	10	–	0.07
10/1,0	XXX	XXX	XXX	6	6	11	25	30	1	32	9.2	72	85	10	0.019	0.07
10/1,5	XXX	XXX	XXX	6	6	11	25	30	1.5	32	9.2	72	85	10	0.019	0.07
10/2,0	XXX	–	–	6	–	11	–	–	2	32	9.2	72	–	10	–	0.07
10/3,0	XXX	–	–	6	–	11	–	–	3	32	9.2	72	–	10	–	0.07
12/0,5	XXX	XXX	XXX	6	6	12	28	36	0.5	38	11	83	93	12	0.023	0.08
12/1,0	XXX	XXX	XXX	6	6	12	28	36	1	38	11	83	93	12	0.023	0.08
12/1,5	XXX	XXX	–	6	6	12	28	–	1.5	38	11	83	–	12	0.023	0.08
12/2,0	XXX	–	–	6	–	12	–	–	2	38	11	83	–	12	–	0.08
12/3,0	XXX	–	–	6	–	12	–	–	3	38	11	83	–	12	–	0.08
16/1,0	–	XXX	XXX	–	8	–	36	48	1	–	–	92	110	16	0.025	–
16/2,0	XXX	XXX	XXX	6	8	16	36	48	2	44	15	92	110	16	0.025	0.09
16/3,0	XXX	–	–	6	–	16	–	–	3	44	15	92	–	16	–	0.09
20/1,0	–	XXX	XXX	–	10	–	41	60	1	–	–	104	126	20	0.03	–

Solid carbide | Standard | Type W | 0 −0.005 | 2 | a_e 0.05×D | h5 DIN 6535 HA

25° ≤ 0.8 mm | 30° ≥ 1 mm

Garant Solid carbide micro precision copy slot drill

With **advanced DLC sp² coating.** For the **highest demands regarding performance and precision in aluminium materials. Extremely tight tolerances** ensure maximum accuracy. Double relief ground with 2 hollow-ground chamfers. **Recess angle α = 16°.**

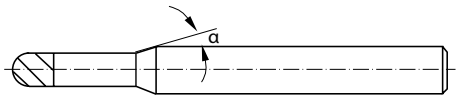
Tolerances:

- Corner radius: **Radius contour = 0 / -0.005mm**
- Neck ∅: **D_4 = 0 / -0.01 mm.**

Note: At greater tool overhang lengths, use a reduced value for a_p!
values for:
copying: $a_p = 0.25 \times D \times a_{p\,korr}$
To calculate the feed rate vf please use the actual speed of the machine (the maximum possible speed)!
e.g: vf = 18000 [rpm]× fz [mm/Z]× z

BN

20 7023



Suitable for/ v_c [m/min]	Alu	Alu	Alu cast > 10 % Si	PMMA acrylic	PE-HD	PA 66	PEEK	PF 31	AFRP aramid	PVDF GF20	POM GF25	PA 66 GF30	PEEK GF30	PTFE CF25	PEEK CF30	Honey-comb sandwich	Cu	CuZn					
ISO code	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N					
20 7023	480	440	400	200	160	200	150	130		180	160	150	130	160		300	160	200		●	●		●

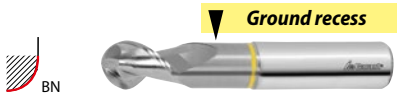
$D_c \times L_4$	11X 20 7023 Solid carbide copy slot drill	L_s	L_4	∅ D_4	L_{tot}		Alu cast > 10 % Si f_z	Correction factor $a_{p\,korr}$
mm	DLC	mm	mm	mm	mm	mm	mm	
0,1×0,3	XXX	0.08	0.3	0.08	45	4	0.012	1
0,1×0,5	XXX	0.08	0.5	0.08	45	4	0.012	1
0,1×1	XXX	0.08	1	0.08	45	4	0.07	0.5
0,2×0,5	XXX	0.16	0.5	0.17	45	4	0.012	1
0,2×1	XXX	0.16	1	0.17	45	4	0.012	1
0,2×2	XXX	0.16	2	0.17	45	4	0.007	0.5
0,2×3	XXX	0.16	3	0.17	45	4	0.007	0.2
0,3×0,5	XXX	0.24	0.5	0.27	45	4	0.016	1
0,3×1	XXX	0.24	1	0.27	45	4	0.016	1
0,3×2	XXX	0.24	2	0.27	45	4	0.016	0.9
0,3×3	XXX	0.24	3	0.27	45	4	0.012	0.5
0,3×4	XXX	0.24	4	0.27	45	4	0.012	0.35
0,3×6	XXX	0.24	6	0.27	45	4	0.007	0.08
0,4×1	XXX	0.32	1	0.37	45	4	0.016	1
0,4×2	XXX	0.32	2	0.37	45	4	0.016	1
0,4×3	XXX	0.32	3	0.37	45	4	0.016	0.8
0,4×4	XXX	0.32	4	0.37	45	4	0.012	0.5
0,4×6	XXX	0.32	6	0.37	45	4	0.012	0.2
0,4×8	XXX	0.32	8	0.37	45	4	0.007	0.08
0,5×1	XXX	0.4	1	0.47	45	4	0.02	1
0,5×2	XXX	0.4	2	0.47	45	4	0.02	1
0,5×3	XXX	0.4	3	0.47	45	4	0.02	0.9
0,5×4	XXX	0.4	4	0.47	45	4	0.02	0.8
0,5×6	XXX	0.4	6	0.47	45	4	0.016	0.35
0,5×8	XXX	0.4	8	0.47	45	4	0.016	0.12
0,5×10	XXX	0.4	10	0.47	50	4	0.012	0.08
0,6×2	XXX	0.48	2	0.57	45	4	0.02	1
0,6×3	XXX	0.48	3	0.57	45	4	0.02	1
0,6×4	XXX	0.48	4	0.57	45	4	0.02	0.9
0,6×6	XXX	0.48	6	0.57	45	4	0.016	0.5
0,6×8	XXX	0.48	8	0.57	45	4	0.016	0.35
0,6×10	XXX	0.48	10	0.57	50	4	0.016	0.12
0,8×2	XXX	0.64	2	0.77	45	4	0.02	1
0,8×3	XXX	0.64	3	0.77	45	4	0.02	1
0,8×4	XXX	0.64	4	0.77	45	4	0.02	1
0,8×6	XXX	0.64	6	0.77	45	4	0.02	0.8
0,8×8	XXX	0.64	8	0.77	45	4	0.016	0.5
0,8×10	XXX	0.64	10	0.77	50	4	0.016	0.35
0,8×12	XXX	0.64	12	0.77	50	4	0.016	0.2

$D_C \times L_4$	11X **20 7023** Solid carbide copy slot drill	L_s	L_4	$\varnothing D_4$	L_{tot}		Alu cast > 10 % Si f_z	Correction factor $a_{p\,ko-rr}$
mm	DLC	mm	mm	mm	mm	mm	mm	
1×2	XXX	0.8	2	0.96	45	4	0.03	1
1×2,5	XXX	0.8	2.5	0.96	45	4	0.03	1
1×3	XXX	0.8	3	0.96	45	4	0.03	1
1×4	XXX	0.8	4	0.96	45	4	0.03	1
1×5	XXX	0.8	5	0.96	45	4	0.03	1
1×6	XXX	0.8	6	0.96	45	4	0.03	0.9
1×8	XXX	0.8	8	0.96	45	4	0.03	0.8
1×10	XXX	0.8	10	0.96	50	4	0.03	0.5
1×12	XXX	0.8	12	0.96	50	4	0.025	0.35
1×15	XXX	0.8	15	0.96	50	4	0.025	0.2
1×16	XXX	0.8	16	0.96	50	4	0.025	0.2
1×20	XXX	0.8	20	0.96	60	4	0.02	0.08
1×25	XXX	0.8	25	0.96	60	4	0.02	0.04
1×30	XXX	0.8	30	0.96	70	4	0.016	0.02
1,2×3	XXX	0.96	3	1.16	45	4	0.03	1
1,2×4	XXX	0.96	4	1.16	45	4	0.03	1
1,2×6	XXX	0.96	6	1.16	45	4	0.03	1
1,2×8	XXX	0.96	8	1.16	45	4	0.03	0.9
1,2×10	XXX	0.96	10	1.16	45	4	0.03	0.8
1,2×12	XXX	0.96	12	1.16	50	4	0.025	0.5
1,2×15	XXX	0.96	15	1.16	55	4	0.025	0.35
1,2×20	XXX	0.96	20	1.16	55	4	0.02	0.12
1,5×3	XXX	1.2	3	1.44	45	4	0.03	1
1,5×4	XXX	1.2	4	1.44	45	4	0.03	1
1,5×6	XXX	1.2	6	1.44	45	4	0.03	1
1,5×8	XXX	1.2	8	1.44	45	4	0.03	1
1,5×10	XXX	1.2	10	1.44	45	4	0.03	0.9
1,5×12	XXX	1.2	12	1.44	50	4	0.03	0.8
1,5×15	XXX	1.2	15	1.44	50	4	0.025	0.5
1,5×16	XXX	1.2	16	1.44	50	4	0.025	0.4
1,5×20	XXX	1.2	20	1.44	60	4	0.025	0.35
1,5×25	XXX	1.2	25	1.44	60	4	0.025	0.12
1,5×30	XXX	1.2	30	1.44	70	4	0.02	0.08
1,8×8	XXX	1.44	8	1.74	45	4	0.035	1
1,8×10	XXX	1.44	10	1.74	45	4	0.035	0.9
1,8×12	XXX	1.44	12	1.74	50	4	0.035	0.9
1,8×15	XXX	1.44	15	1.74	50	4	0.03	0.8
1,8×20	XXX	1.44	20	1.74	55	4	0.03	0.5
2×3	XXX	1.6	3	1.94	45	4	0.04	1
2×4	XXX	1.6	4	1.94	45	4	0.035	1
2×6	XXX	1.6	6	1.94	45	4	0.035	1
2×8	XXX	1.6	8	1.94	45	4	0.035	1
2×10	XXX	1.6	10	1.94	45	4	0.035	1
2×12	XXX	1.6	12	1.94	50	4	0.035	0.9
2×14	XXX	1.6	14	1.94	50	4	0.035	0.9
2×15	XXX	1.6	15	1.94	50	4	0.035	0.8
2×16	XXX	1.6	16	1.94	50	4	0.035	0.8
2×20	XXX	1.6	20	1.94	60	4	0.03	0.5
2×25	XXX	1.6	25	1.94	60	4	0.03	0.35
2×30	XXX	1.6	30	1.94	70	4	0.03	0.2
2×35	XXX	1.6	35	1.94	80	4	0.025	0.08
2×40	XXX	1.6	40	1.94	80	4	0.025	0.04
2,5×15	XXX	2	15	2.41	50	4	0.035	0.9
2,5×20	XXX	2	20	2.41	55	4	0.035	0.8
2,5×25	XXX	2	25	2.41	60	4	0.03	0.5
2,5×30	XXX	2	30	2.41	70	4	0.03	0.35
3×6	XXX	3.5	6	2.92	45	4	0.035	1
3×8	XXX	3.5	8	2.92	45	4	0.035	1
3×10	XXX	3.5	10	2.92	45	4	0.035	1
3×12	XXX	3.5	12	2.92	45	4	0.035	1
3×15	XXX	3.5	15	2.92	50	4	0.035	1
3×20	XXX	3.5	20	2.92	55	4	0.035	0.9
3×25	XXX	3.5	25	2.92	60	4	0.035	0.8
3×30	XXX	3.5	30	2.92	70	4	0.03	0.5
3×35	XXX	3.5	35	2.92	70	4	0.03	0.35
3×40	XXX	3.5	40	2.92	80	4	0.03	0.35
3×45	XXX	3.5	45	2.92	80	4	0.03	0.2

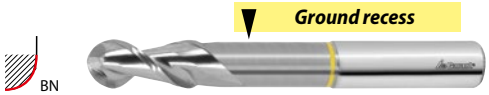
Solid carbide | Standard | Type W | f8 | 2 | 45° | a_e 0.03×D | h6 DIN 6535 HA | G 2.5 n_{max}

Garant® Solid carbide ball nose slot drill

Additionally **polish ground** in the flutes for **outstanding chip evacuation** in long-chipping aluminium components.
Dimensions similar to **DIN 6527.**



20 7026



20 7028

Suitable for/ v_c [m/min]	Alu	Alu	Alu cast > 10 % Si	PMMA acrylic	PE-HD	PA 66	PEEK	PF 31	AFRP aramid	PVDF GF20	POM GF25	PA 66 GF30	PEEK GF30	PTFE CF25	PEEK CF30	Honey-comb sandwich	Cu	CuZn					
ISO code	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N					
20 7026	230	180	140	200	160	200	150	130								300	160	200		●	○	○	○
20 7028	220	170	130	180	140	180	130	120								180	140	180		●	○	○	○

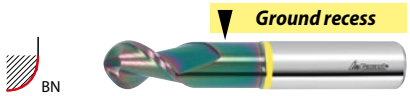
Ø f8 D_c	11X 20 7026	11X 20 7028	L_s		L_4		Ø D_4	L_{tot}			Alu f_z
	Solid carbide ball nose slot drill		20 7026	20 7028	20 7026	20 7028		20 7026	20 7028		
mm			mm	mm	mm	mm	mm	mm	mm	mm	mm
3	XXX	XXX	6	10	16	32	2.7	50	75	3	0.03
4	XXX	XXX	7	13	17	36	3.7	54	75	4	0.03
5	XXX	XXX	8	15	18	40	4.6	54	75	5	0.06
6	XXX	XXX	10	16	21	44	5.5	54	100	6	0.06
8	XXX	XXX	12	22	27	54	7.5	59	100	8	0.06
10	XXX	XXX	13	25	32	60	9.4	67	100	10	0.08
12	XXX	XXX	16	26	38	60	11.4	73	100	12	0.08
14	XXX	XXX	16	26	38	60	13.2	75	100	14	0.15
16	XXX	XXX	20	30	44	92	15	83	150	16	0.15
20	XXX	XXX	25	40	50	92	19	93	150	20	0.2

Solid carbide | Standard | Type W | f8 | 2 | 45° | a_e 0.03×D | h6 DIN 6535 HA | G 2.5 n_{max}

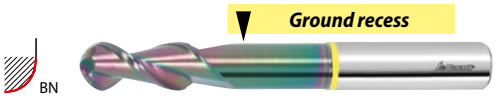
Garant® Solid carbide ball nose slot drill

With the latest generation of **DLC coating sp²**.
Tolerances: Radius contour = **±0.01 mm.**

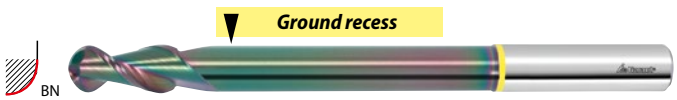
Note:
20 7032 – **Successor product to No. 207030.**
20 7072 – **Successor product to No. 207070.**
20 7092 – **Successor product to No. 207090.**



20 7032



20 7072



20 7092

Suitable for/ v_c [m/min]	Alu	Alu	Alu cast > 10 % Si	PMMA acrylic	PE-HD	PA 66	PEEK	PF 31	AFRP aramid	PVDF GF20	POM GF25	PA 66 GF30	PEEK GF30	PTFE CF25	PEEK CF30	Honey-comb sandwich	Cu	CuZn					
ISO code	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N					
20 7032	600	550	500	220	180	220	170	150		200	180	170	140	180		320	180	220		●	●	○	●
20 7072	500	450	400	200	160	200	150	130		180	160	150	120	160		300	160	200		●	●	○	●
20 7092	400	375	325	190	150	190	140	120		160	150	140	110	150		280	150	180		●	●	○	●

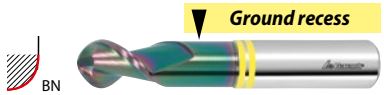
Ø f8 D_c	11X 20 7032	11X 20 7072	11X 20 7092	L_s		L_4			Ø D_4	L_{tot}				Alu f_z
	Solid carbide ball nose slot drill			20 7032	20 7072 20 7092	20 7032	20 7072	20 7092		20 7032	20 7072	20 7092		
mm	DLC	DLC	DLC	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
3	XXX	XXX	XXX	6	10	16	32	82	2.7	50	75	125	3	0.03
4	XXX	XXX	XXX	7	13	17	36	86	3.7	54	75	125	4	0.03
5	XXX	XXX	–	8	15	18	40	–	4.6	54	75	–	5	0.06
6	XXX	XXX	XXX	10	16	21	44	94	5.5	54	100	150	6	0.06
8	XXX	XXX	XXX	12	22	27	54	104	7.5	59	100	150	8	0.06
10	XXX	XXX	XXX	13	25	32	60	110	9.4	67	100	150	10	0.08
12	XXX	XXX	XXX	16	26	38	60	105	11.4	73	100	150	12	0.08
14	XXX	XXX	–	16	26	38	60	–	13.2	75	100	–	14	0.15
16	XXX	XXX	–	20	30	44	92	–	15	83	150	–	16	0.15
20	XXX	XXX	–	25	40	50	92	–	19	93	150	–	20	0.2

Solid carbide | Standard | Type W | −0.007 +0.002 | 2 | 45° | a_e 0.03×D | h6 DIN 6535 HA | G 2.5 n_{max}

Garant® Solid carbide high precision ball nose slot drill

With **DLC coating sp²** of the latest generation.
High precision ball nose slot drills in respect of **radius Ø and contour variations within the µm range.**
Tolerances: radius contour **= ±0.005 mm.**
For the highest demands on dimensional accuracy of the workpiece.

Note: **Successor product to No. 207095.**



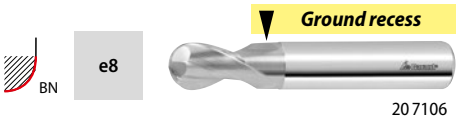
20 7097

Suitable for/ v_c [m/min]	Alu	Alu	Alu cast > 10 % Si	PMMA acrylic	PE-HD	PA 66	PEEK	PF 31	AFRP aramid	PVDF GF20	POM GF25	PA 66 GF30	PEEK GF30	PTFE CF25	PEEK CF30	Honey-comb sandwich	Cu	CuZn
ISO code	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
20 7097	600	550	500	220	180	220	170	150		200	180	170	140	180		320	180	220

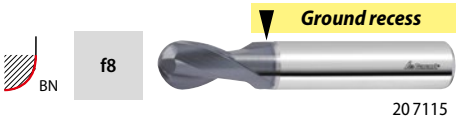
Ø D_c	11X 20 7097 Solid carbide high precision ball nose slot drill	L_s	L_4	Ø D_4	L_{tot}		Alu f_z
mm	DLC	mm	mm	mm	mm	mm	mm
3	XXX	6	16	2.7	50	3	0.03
4	XXX	7	17	3.7	54	4	0.03
5	XXX	8	18	4.6	54	5	0.06
6	XXX	10	21	5.5	54	6	0.06
8	XXX	12	27	7.5	59	8	0.06
10	XXX	13	32	9.4	67	10	0.08
12	XXX	16	38	11.4	73	12	0.08

Solid carbide | Standard | Type N | 2 | 30° | a_e 0.05×D | h6 DIN 6535 HA

Solid carbide ball nose slot drill



20 7106



20 7115

20 7125

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	GG(G)	CuZn	Uni
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	K	N	
20 7106	230	180	140	90	80	70	45							40	35	70	160	●
20 7115/7125		350	250	160	140	130	80	70	50					80	70	120	320	●

Ø D_c	11X 20 7106 Garant®	11X 20 7115 Garant®	12X 20 7125 HOLEX® Solid carbide ball nose slot drill	L_s 20 7106 20 7115	L_s 20 7125	L_4 20 7106 20 7115	Ø D_4 20 7106 20 7115	L_{tot}		< 900 N f_z	< 900 N f_z
mm		TiAlN	TiAlN	mm	mm	mm	mm	mm	mm	mm	mm
1	XXX	XXX	XXX	2	3	3	0.95	50	6	0.006	0.006
1,2	XXX	XXX	XXX	2	3	3	1.15	50	6	0.006	0.006
1,5	XXX	XXX	XXX	2	4	5	1.44	50	6	0.006	0.006
1,8	–	XXX	XXX	2	5	5.5	1.74	50	6	0.006	0.006
2	XXX	XXX	XXX	2	5	6	1.92	50	6	0.011	0.013
2,5	–	XXX	–	5	–	9	2.42	50	6	0.011	0.013
3	XXX	XXX	XXX	5	5	9	2.9	50	6	0.011	0.013
4	XXX	XXX	XXX	8	8	12	3.9	54	6	0.023	0.025
5	XXX	XXX	XXX	9	9	15	4.9	54	6	0.023	0.025
6	XXX	XXX	XXX	10	10	17	5.9	54	6	0.033	0.037
8	XXX	XXX	XXX	11	12	19	7.8	58	8	0.045	0.051
10	XXX	XXX	XXX	14	14	26	9.8	66	10	0.06	0.068
12	XXX	XXX	XXX	16	16	28	11.8	73	12	0.08	0.09
14	–	XXX	–	18	–	30	13.8	75	14	0.08	0.09
16	XXX	XXX	XXX	22	22	32	15.7	82	16	0.1	0.113
18	–	XXX	–	24	–	35	17.7	84	18	0.1	0.113
20	XXX	XXX	XXX	26	26	40	19.7	92	20	0.12	0.135

Solid carbide | Standard | Type N | f8 | 2 | 30° | a_e 0.05×D | h6 DIN 6535 HA

Garant

Solid carbide ball nose slot drill

Full radius ball nose slot drill with long main flutes.

20 7135

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	GG(G)	CuZn	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	K	N						
20 7135	230	180	140	**90**	**80**	**70**	**45**							**40**		**70**	160	●		●	○		

Ø f8 D_c	11X	20 7135	L_s	L_{tot}		< 900 N f_z	< 900 N f_z
mm		uncoated	mm	mm	mm	mm	mm
3		XXX	20	60	3	0.011	0.013
4		XXX	30	75	4	0.023	0.025
5		XXX	30	75	5	0.023	0.025
6		XXX	40	100	6	0.033	0.037
8		XXX	40	100	8	0.045	0.051

Ø f8 D_c	11X	20 7135	L_s	L_{tot}		< 900 N f_z	< 900 N f_z
mm		uncoated	mm	mm	mm	mm	mm
10		XXX	40	100	10	0.06	0.068
12		XXX	45	100	12	0.08	0.09
16		XXX	75	150	16	0.1	0.113
20		XXX	75	150	20	0.12	0.135

Solid carbide | Standard | Type N | h10 | 2 | 30° | a_e 0.5×D | a_e 0.05×D | h6 DIN 6535 HA

HOLEX

Solid carbide ball nose slot drill

20 7154

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	GG(G)	CuZn	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	K	N						
20 7154		350	250	160	140	**130**	**80**	70	50					**80**	70	**120**	320	●		●	○	○	○

Ø h10 D_c	12X	20 7154	L_s	L_{tot}		< 900 N f_z	< 900 N f_z
mm		TiAlN	mm	mm	mm	mm	mm
3		XXX	8	63	3	0.011	0.013
4		XXX	8	75	4	0.023	0.025
5		XXX	9	75	5	0.023	0.025
6		XXX	10	100	6	0.033	0.037
8		XXX	12	100	8	0.045	0.051

Ø h10 D_c	12X	20 7154	L_s	L_{tot}		< 900 N f_z	< 900 N f_z
mm		TiAlN	mm	mm	mm	mm	mm
10		XXX	14	100	10	0.06	0.068
12		XXX	16	100	12	0.08	0.09
16		XXX	22	150	16	0.1	0.113
20		XXX	26	150	20	0.12	0.135

Solid carbide | Standard | Type H | 2 | 30° | a_e 0.03×D | h5 DIN 6535 HA

Garant

Solid carbide ball nose slot drill

Exact **radius form without profile distortion**.
Double relief ground side clearance angle.
Tolerance: Radius contour = **±0.01 mm.**

20 7175 – With enclosed angle **220°**.
Size nominal Ø: **D_c = f8**

20 7176 – With enclosed angle **260°**.

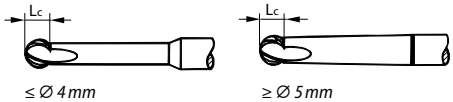
20 7176 Size 1–5 – Size nominal Ø: **D_c = 0 / -0.01 mm**.

20 7176 Size 6–10 – Size nominal Ø: **D_c = -0.01 / -0.025 mm**.

f8

20 7175

20 7176



≤ Ø 4 mm ≥ Ø 5 mm

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	K						
20 7175/7176				**575**	**390**	**390**	**280**	**200**						**200**			**575**	●		●	○	●	●

Ø D_c	11X	20 7175	11X	20 7176	L_c		L_4	Ø D_4		L_{tot}		< 1100 N f_z
		220°		260°	20 7175	20 7176		20 7175	20 7176			
mm		TiAlN		TiAlN	mm	mm	mm	mm	mm	mm	mm	mm
1		XXX		XXX	0.7	0.7	5	0.85	0.7	58	6	0.006
2		XXX		XXX	1.5	1.7	10	1.7	1.4	58	6	0.01

Ø D_c	11X 20 7175	11X 20 7176	L_c	L_4	Ø D_4		L_{tot}		< 1100 N f_z
	Solid carbide ball nose slot drill								
	220°	260°	20 7175	20 7176		20 7175	20 7176			
mm	TiAlN	TiAlN	mm	mm	mm	mm	mm	mm	mm	mm
3	XXX	XXX	2.3	2.6	15	2.7	2.1	65	6	0.01
4	XXX	XXX	3	3.5	20	3.7	2.8	70	6	0.032
5	XXX	XXX	3.5	4.3	25	4.7	3.5	80	6	0.032
6	XXX	XXX	4	5.2	30	5.9	4.2	100	6	0.044
8	XXX	XXX	5.4	7	40	7.9	5.6	100	8	0.052
10	XXX	XXX	6.7	8.7	50	9.9	7.1	120	10	0.062

Solid carbide | Standard | Type H | f8 | 2 | 30° | a_e 0.5×D | a_e 0.03×D | h6 DIN 6535 HA | HPC

Garant

Solid carbide ball nose slot drill HPC

Precision ground for very high accuracy requirements.
Tolerance: Radius contour = **±0.005 mm.**

BN

20 7240

BN

20 7280

BN

20 7320

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	CuZn					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	K	N					
20 7240				225	210	180	145	140						85	70		350	400		●	○	●	●
20 7280				210	190	175	140	135						80	65		300	350		●	○	●	●
20 7320				200	180	170	130	125						70	60		280	300		●	○	●	●

Ø f8 D_c / D_s	11X 20 7240	11X 20 7280	11X 20 7320	L_s	L_{tot}				< 1100 N f_z	< 1100 N f_z	Correction factor for v_c
	Solid carbide ball nose slot drill										
		HPC			20 7240	20 7280	20 7320				
mm	TiAlN	TiAlN	TiAlN	mm	mm	mm	mm	mm	mm	mm	
0,1	XXX	–	–	0.2	38	–	–	3	0.0035	0.004	–
0,2	XXX	–	–	0.4	38	–	–	3	0.0035	0.004	–
0,25	XXX	–	–	0.5	38	–	–	3	0.0035	0.004	–
0,3	XXX	–	–	1	38	–	–	3	0.0035	0.004	–
0,4	XXX	–	–	1	38	–	–	3	0.0035	0.004	–
0,5	XXX	–	–	1.5	38	–	–	3	0.0044	0.005	–
0,5/6	XXX	–	–	1.5	54	–	–	6	0.0044	0.005	–
0,6	XXX	–	–	1.5	38	–	–	3	0.0044	0.005	–
0,7	XXX	–	–	2	38	–	–	3	0.0044	0.005	–
0,8	XXX	–	–	2	38	–	–	3	0.0044	0.005	–
0,9	XXX	–	–	2.5	38	–	–	3	0.0044	0.005	–
1	XXX	–	–	2	50	–	–	3	0.006	0.007	–
1/6	XXX	XXX	–	2	54	80	–	6	0.006	0.007	1.25
1,1	XXX	–	–	3	50	–	–	3	0.006	0.007	–
1,2	XXX	–	–	3	50	–	–	3	0.006	0.007	–
1,4	XXX	–	–	3	50	–	–	3	0.006	0.007	–
1,5	XXX	–	–	3	50	–	–	3	0.006	0.007	–
1,5/6	XXX	XXX	–	3	54	80	–	6	0.006	0.007	–
1,6	XXX	–	–	4	50	–	–	3	0.006	0.007	–
1,8	XXX	–	–	4	50	–	–	3	0.006	0.007	–
2	XXX	–	–	4	50	–	–	3	0.0095	0.011	–
2/6	XXX	XXX	–	4	54	80	–	6	0.0095	0.011	1.25
2,5	XXX	–	–	5	50	–	–	3	0.0095	0.011	–
2,5/6	XXX	XXX	–	5	54	80	–	6	0.0095	0.011	–
3	XXX	XXX	XXX	5	50	75	100	3	0.0095	0.011	–
3/6	XXX	XXX	–	5	54	80	–	6	0.0095	0.011	1.25
4	XXX	XXX	XXX	8	54	75	100	4	0.032	0.037	–
4/6	XXX	XXX	XXX	8	54	80	120	6	0.032	0.037	1.25
5	XXX	XXX	XXX	9	54	75	100	5	0.032	0.037	–
5/6	XXX	XXX	–	9	54	100	–	6	0.032	0.037	1.25
6	XXX	XXX	XXX	10	54	100	120	6	0.044	0.051	–
6/8	–	–	XXX	10	–	–	120	8	0.044	0.051	1.25
7	XXX	–	–	12	59	–	–	8	0.044	0.051	–
8	XXX	XXX	XXX	12	59	100	120	8	0.052	0.06	–
8/10	–	–	XXX	12	–	–	120	10	0.052	0.06	1.25
9	XXX	–	–	14	66	–	–	10	0.052	0.06	–
10	XXX	XXX	XXX	14	66	100	120	10	0.062	0.071	–
12	XXX	XXX	XXX	16	73	100	150	12	0.073	0.084	–
14	XXX	–	–	18	75	–	–	14	0.073	0.084	–
16	XXX	XXX	–	22	82	150	–	16	0.102	0.117	–
20	XXX	XXX	–	26	92	150	–	20	0.12	0.138	–

Solid carbide | Standard | Type H | 2 | 30° | a_e 0.2×D | a_e 0.05×D | HPC

Diabolo solid carbide full radius ball nose slot drills HPC / solid carbide high precision slot drills HPC

GARANT Diabolo:
Special geometry, coating and carbide for hard machining.
Tolerance: Radius contour = **±0.005 mm.**

20 7347 – **Solid carbide high precision ball nose slot drill with radius Ø and contour variations within the µm range.**

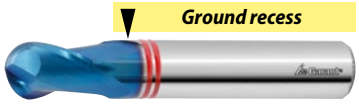
BN | f8 | h6 DIN 6535 HA

20 7342

BN | f8 | h6 DIN 6535 HA

20 7362

BN | −0.007 +0.002 | h5 DIN 6535 HA



20 7347

Tolerance in the µm range.

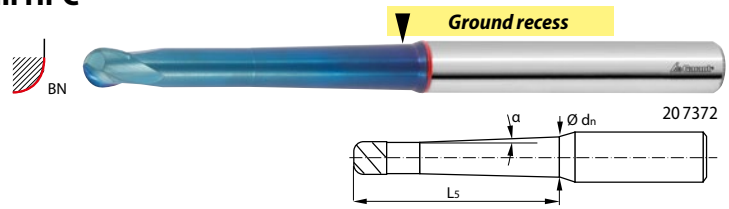
Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 50 HRC	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	Graphite GRP CRP					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	H	M	M	S	N					
20 7342/47/62								200	190	170	150	110							○	○	●	●	

Ø f8 D_c / D_s	1 X 20 7342	1 X 20 7362	1 X 20 7347	L_s		L_4	Ø D_4	L_{tot}			< 65 HRC f_z	< 65 HRC f_z
	Diabolo solid carbide ball nose slot drill		Diabolo solid carbide high precision ball nose slot drill									
	HPC			20 7342 20 7362	20 7347	20 7347	20 7347	20 7342 20 7347	20 7362			
mm	TiAlN	TiAlN	TiAlN	mm	mm	mm	mm	mm	mm	mm	mm	mm
0,1	XXX	–	XXX	0.2	0.1	–	–	38	–	3	0.005	0.005
0,2	XXX	–	XXX	0.4	0.2	–	–	38	–	3	0.005	0.005
0,25	XXX	–	–	0.5	–	–	–	38	–	3	0.005	0.005
0,3	XXX	–	XXX	1	0.3	–	–	38	–	3	0.005	0.005
0,4	XXX	–	XXX	1	0.4	–	–	38	–	3	0.005	0.005
0,5	XXX	–	XXX	1.5	0.5	–	–	38	–	3	0.005	0.005
0,5/6	XXX	–	–	1.5	–	–	–	54	–	6	0.005	0.005
0,6	XXX	–	XXX	1.5	0.6	–	–	38	–	3	0.005	0.005
0,7	XXX	–	–	2	–	–	–	38	–	3	0.005	0.005
0,8	XXX	–	XXX	2	0.8	–	–	38	–	3	0.005	0.005
0,9	XXX	–	–	2.5	–	–	–	38	–	3	0.005	0.005
1	XXX	–	XXX	2	1	2	0.96	50	–	3	0.005	0.005
1/6	XXX	XXX	–	2	–	–	–	54	80	6	0.005	0.005
1,1	XXX	–	–	3	–	–	–	50	–	3	0.005	0.005
1,2	XXX	–	–	3	–	–	–	50	–	3	0.005	0.005
1,4	XXX	–	–	3	–	–	–	50	–	3	0.005	0.005
1,5	XXX	–	XXX	3	1.5	2.5	1.44	50	–	3	0.005	0.005
1,5/6	XXX	XXX	–	3	–	–	–	54	80	6	0.005	0.005
1,6	XXX	–	–	4	–	–	–	50	–	3	0.005	0.005
1,8	XXX	–	–	4	–	–	–	50	–	3	0.005	0.005
2	XXX	–	XXX	4	2	4	1.92	50	–	3	0.005	0.005
2/6	XXX	XXX	–	4	–	–	–	54	80	6	0.005	0.005
2,5	XXX	–	XXX	5	2.5	4	2.4	50	–	3	0.019	0.019
2,5/6	XXX	XXX	–	5	–	–	–	54	80	6	0.019	0.019
3	XXX	XXX	XXX	5	3	5	2.85	50	75	3	0.019	0.019
3/6	XXX	XXX	–	5	–	–	–	54	80	6	0.019	0.019
4	XXX	XXX	XXX	8	4	9	3.8	54	75	4	0.019	0.019
4/6	XXX	XXX	–	8	–	–	–	54	80	6	0.019	0.019
5	XXX	XXX	XXX	9	5	10	4.8	54	75	5	0.048	0.048
5/6	XXX	XXX	–	9	–	–	–	54	100	6	0.048	0.048
6	XXX	XXX	XXX	10	6	11	5.8	54	100	6	0.048	0.048
8	XXX	XXX	–	12	–	–	–	58	100	8	0.06	0.06
10	XXX	XXX	–	14	–	–	–	66	100	10	0.07	0.07
12	XXX	XXX	–	16	–	–	–	73	100	12	0.08	0.08
14	XXX	XXX	–	18	–	–	–	75	100	14	0.085	0.085
16	XXX	XXX	–	22	–	–	–	82	150	16	0.09	0.09
20	XXX	XXX	–	26	–	–	–	92	150	20	0.1	0.1

Solid carbide | Standard | Type H | f8 | 2 | 30° | a_e 0.05×D | h6 DIN 6535 HA | HPC

Garant Diabolo solid carbide ball nose slot drill HPC

GARANT Diabolo:
Special geometry, coating and carbide for hard machining.
Taper transition with 1.5° (angle α).
Tolerance: Radius contour = **±0.005 mm.**



Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 50 HRC	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	Graphite GRP CRP					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	H	M	M	S	N					
20 7372								180	170	150	135	95							○	○	●	●	

Ø f8 D_c	11X 20 7372 Diabolo solid carbide ball nose slot drill HPC	L_5	L_4	Ø D_4	L_{tot}		L_5	Ø d_n	< 65 HRC f_z
mm	TiAlN	mm	mm	mm	mm	mm	mm	mm	mm
0,6	XXX	0.8	1.4	0.55	75	3	27	1.9	0.005
0,8	XXX	1	1.6	0.75	75	3	27	2.1	0.005
1	XXX	1.2	2	0.95	75	3	27	2.3	0.005
1,2	XXX	1.4	2.4	1.15	75	3	27	2.5	0.005
1,5	XXX	1.8	3	1.45	75	3	27	2.7	0.005
2	XXX	2.4	4	1.95	75	3	27	3	0.005
3	XXX	4	12	2.8	80	6	40	4.3	0.019
4	XXX	5	16	3.8	80	6	40	5.1	0.019
5	XXX	6	20	4.8	80	6	40	5.9	0.048
6	XXX	6	25	5.8	100	8	50	7.1	0.048
8	XXX	7	32	7.8	120	10	60	9.3	0.06
10	XXX	9	40	9.8	160	12	80	11.9	0.07
12	XXX	11	50	11.8	200	16	100	14.5	0.08

Garant Micro precision milling cutters

The comprehensive range:

Yellow ring with **DLC** coating

Red ring with **DIABOLO** coating

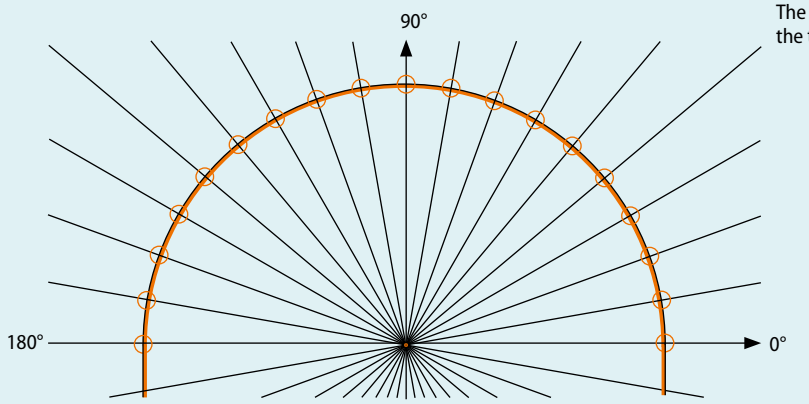
Black ring with **DIAMOND** coating

Precise and highly accurate

The tolerances:

Cutter diameter:	0 / – 0.005 mm
Radius tolerance, torus cutters:	± 0.0025 mm
Radius tolerance, copy slot drills:	0 / – 0.005 mm
Recess diameter:	0 / – 0.01 mm

Radius contour / copy slot drills:



The contour lies precisely within the tolerance of 0 / – 0.005 mm.

Solid carbide | Standard | Type H | 0 −0.005 | 2 | a_e 0.05×D | h5 DIN 6535 HA

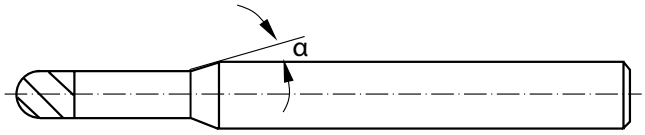
25° ≤ 0.8 mm | 30° ≥ 1 mm

Garant Diabolo solid carbide micro precision copy slot drill

GARANT Diabolo:
Special geometry, coating and carbide for **hard machining in the high-performance field.** Suitable even for **machining electrolytic copper**.
Recess angle α = 16°.
Tolerances:

- Corner radius: **Radius contour = 0 / -0.005 mm.**
- Neck ∅: **D_4 = 0 / -0.01 mm.**

Note: At greater tool overhang lengths, use a reduced value for a_p! values for:
copying: $a_p = 0.05 \times D \times a_{p\,korr}$
To calculate the feed rate vf please use the actual speed of the machine (the maximum possible speed)! e.g: vf = 18000 [rpm]× fz [mm/Z]× z



Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 50 HRC	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	CuZn					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	H	M	M	S	N					
20 7373					200	200	190	170	120	100	72	55	50	45				140		○	○	●	●

∅D_c × L_4	11X 20 7373 Diabolo solid carbide copy slot drill	L_s	L_4	∅ D_4	L_{tot}		< 65 HRC f_z	Correction factor $a_{p\,korr}$
mm	TiAlN	mm	mm	mm	mm	mm	mm	
0,1×0,3	XXX	0.08	0.3	0.08	45	4	0.009	1
0,1×0,5	XXX	0.08	0.5	0.08	45	4	0.009	1
0,1×1	XXX	0.08	1	0.08	45	4	0.005	0.5
0,2×0,5	XXX	0.16	0.5	0.17	45	4	0.009	1
0,2×1	XXX	0.16	1	0.17	45	4	0.009	1
0,2×1,5	XXX	0.16	1.5	0.17	45	4	0.009	0.8
0,2×2	XXX	0.16	2	0.17	45	4	0.005	0.5
0,2×3	XXX	0.16	3	0.17	45	4	0.005	0.2
0,3×0,5	XXX	0.24	0.5	0.27	45	4	0.012	1
0,3×1	XXX	0.24	1	0.27	45	4	0.012	1
0,3×2	XXX	0.24	2	0.27	45	4	0.012	0.9
0,3×3	XXX	0.24	3	0.27	45	4	0.009	0.5
0,3×4	XXX	0.24	4	0.27	45	4	0.009	0.35
0,4×1	XXX	0.32	1	0.37	45	4	0.012	1
0,4×1,5	XXX	0.32	1.5	0.37	45	4	0.012	1
0,4×2	XXX	0.32	2	0.37	45	4	0.012	1
0,4×3	XXX	0.32	3	0.37	45	4	0.012	0.8
0,4×3,5	XXX	0.32	3.5	0.37	45	4	0.01	0.7
0,4×4	XXX	0.32	4	0.37	45	4	0.009	0.5
0,4×5	XXX	0.32	5	0.37	45	4	0.009	0.35
0,4×6	XXX	0.32	6	0.37	45	4	0.009	0.2
0,5×1	XXX	0.4	1	0.47	45	4	0.015	1
0,5×2	XXX	0.4	2	0.47	45	4	0.015	1
0,5×3	XXX	0.4	3	0.47	45	4	0.015	0.9
0,5×4	XXX	0.4	4	0.47	45	4	0.015	0.8
0,5×5	XXX	0.4	5	0.47	45	4	0.012	0.5
0,5×6	XXX	0.4	6	0.47	45	4	0.012	0.35
0,5×8	XXX	0.4	8	0.47	45	4	0.012	0.12
0,5×10	XXX	0.4	10	0.47	50	4	0.009	0.08
0,6×1	XXX	0.48	1	0.57	45	4	0.015	1
0,6×2	XXX	0.48	2	0.57	45	4	0.015	1
0,6×3	XXX	0.48	3	0.57	45	4	0.015	1
0,6×4	XXX	0.48	4	0.57	45	4	0.015	0.9
0,6×5	XXX	0.48	5	0.57	45	4	0.015	0.8
0,6×6	XXX	0.48	6	0.57	45	4	0.012	0.5
0,6×8	XXX	0.48	8	0.57	45	4	0.012	0.35
0,6×10	XXX	0.48	10	0.57	50	4	0.012	0.12
0,8×2	XXX	0.64	2	0.77	45	4	0.015	1
0,8×3	XXX	0.64	3	0.77	45	4	0.015	1
0,8×4	XXX	0.64	4	0.77	45	4	0.015	1
0,8×5	XXX	0.64	5	0.77	45	4	0.015	0.9
0,8×6	XXX	0.64	6	0.77	45	4	0.015	0.8
0,8×8	XXX	0.64	8	0.77	45	4	0.012	0.5
0,8×10	XXX	0.64	10	0.77	50	4	0.012	0.35

ØD$_c$ ×L$_4$	11X 20 7373 Diabolo solid carbide copy slot drill	L$_s$	L$_4$	Ø D$_4$	L$_{tot}$		< 65 HRC f$_z$	Correction factor a$_{p\,korr}$
mm	TiAlN	mm	mm	mm	mm	mm	mm	
1×2	XXX	0.8	2	0.96	45	4	0.02	1
1×2,5	XXX	0.8	2.5	0.96	45	4	0.02	1
1×3	XXX	0.8	3	0.96	45	4	0.02	1
1×4	XXX	0.8	4	0.96	45	4	0.02	1
1×5	XXX	0.8	5	0.96	45	4	0.02	1
1×6	XXX	0.8	6	0.96	45	4	0.02	0.9
1×8	XXX	0.8	8	0.96	45	4	0.02	0.8
1×10	XXX	0.8	10	0.96	50	4	0.015	0.5
1×12	XXX	0.8	12	0.96	50	4	0.015	0.35
1×14	XXX	0.8	14	0.96	50	4	0.015	0.2
1×16	XXX	0.8	16	0.96	60	4	0.015	0.12
1×18	XXX	0.8	18	0.96	60	4	0.01	0.08
1×20	XXX	0.8	20	0.96	60	4	0.01	0.04
1×25	XXX	0.8	25	0.96	60	4	0.01	0.04
1,2×2	XXX	0.96	2	1.16	45	4	0.02	1
1,2×4	XXX	0.96	4	1.16	45	4	0.02	1
1,2×6	XXX	0.96	6	1.16	45	4	0.02	1
1,2×8	XXX	0.96	8	1.16	45	4	0.02	0.9
1,2×10	XXX	0.96	10	1.16	45	4	0.02	0.8
1,2×12	XXX	0.96	12	1.16	45	4	0.015	0.5
1,2×14	XXX	0.96	14	1.16	55	4	0.015	0.35
1,2×16	XXX	0.96	16	1.16	55	4	0.015	0.35
1,2×18	XXX	0.96	18	1.16	55	4	0.015	0.2
1,2×20	XXX	0.96	20	1.16	55	4	0.015	0.12
1,5×3	XXX	1.2	3	1.44	45	4	0.02	1
1,5×4	XXX	1.2	4	1.44	45	4	0.02	1
1,5×6	XXX	1.2	6	1.44	45	4	0.02	1
1,5×8	XXX	1.2	8	1.44	45	4	0.02	1
1,5×10	XXX	1.2	10	1.44	45	4	0.02	0.9
1,5×12	XXX	1.2	12	1.44	45	4	0.02	0.8
1,5×14	XXX	1.2	14	1.44	50	4	0.02	0.8
1,5×16	XXX	1.2	16	1.44	50	4	0.015	0.5
1,5×18	XXX	1.2	18	1.44	60	4	0.015	0.35
1,5×20	XXX	1.2	20	1.44	60	4	0.015	0.35
1,6×4	XXX	1.28	4	1.54	45	4	0.03	1
1,6×8	XXX	1.28	8	1.54	45	4	0.03	1
1,6×12	XXX	1.28	12	1.54	50	4	0.03	0.8
1,6×16	XXX	1.28	16	1.54	50	4	0.025	0.5
1,6×20	XXX	1.28	20	1.54	60	4	0.025	0.35
1,8×8	XXX	1.44	8	1.74	45	4	0.03	1
1,8×12	XXX	1.44	12	1.74	45	4	0.03	0.9
1,8×16	XXX	1.44	16	1.74	50	4	0.03	0.8
1,8×20	XXX	1.44	20	1.74	55	4	0.025	0.5
2×4	XXX	1.6	4	1.94	45	4	0.03	1
2×6	XXX	1.6	6	1.94	45	4	0.03	1
2×8	XXX	1.6	8	1.94	45	4	0.03	1
2×10	XXX	1.6	10	1.94	45	4	0.03	1
2×12	XXX	1.6	12	1.94	45	4	0.03	0.9
2×14	XXX	1.6	14	1.94	50	4	0.03	0.9
2×16	XXX	1.6	16	1.94	50	4	0.03	0.8
2×18	XXX	1.6	18	1.94	60	4	0.03	0.8
2×20	XXX	1.6	20	1.94	60	4	0.025	0.5
2×22	XXX	1.6	22	1.94	60	4	0.025	0.5
2×25	XXX	1.6	25	1.94	60	4	0.025	0.35
2×30	XXX	1.6	30	1.94	70	4	0.025	0.2
2×35	XXX	1.6	35	1.94	80	4	0.02	0.08
2×40	XXX	1.6	40	1.94	80	4	0.02	0.08
2,5×6	XXX	2	6	2.41	45	4	0.03	1
2,5×8	XXX	2	8	2.41	45	4	0.03	1
2,5×10	XXX	2	10	2.41	45	4	0.03	1
2,5×15	XXX	2	15	2.41	50	4	0.03	0.9
2,5×20	XXX	2	20	2.41	55	4	0.03	0.8
2,5×25	XXX	2	25	2.41	60	4	0.025	0.5
2,5×30	XXX	2	30	2.41	70	4	0.025	0.35
3×6	XXX	3.5	6	2.92	45	4	0.03	1
3×8	XXX	3.5	8	2.92	45	4	0.03	1
3×10	XXX	3.5	10	2.92	45	4	0.03	1
3×12	XXX	3.5	12	2.92	45	4	0.03	1
3×14	XXX	3.5	14	2.92	50	4	0.03	1
3×16	XXX	3.5	16	2.92	50	4	0.03	1
3×18	XXX	3.5	18	2.92	55	4	0.03	0.9
3×20	XXX	3.5	20	2.92	55	4	0.03	0.9
3×25	XXX	3.5	25	2.92	60	4	0.03	0.8
3×30	XXX	3.5	30	2.92	70	4	0.025	0.5
3×35	XXX	3.5	35	2.92	70	4	0.025	0.35
3×40	XXX	3.5	40	2.92	80	4	0.025	0.35

Solid carbide | Standard | Type N | f8 | 2 | 30° | a_e 0.5×D | a_e 0.03×D | h6 DIN 6535 HA | HPC

GARANT Master Steel solid carbide ball nose slot drill

Precision ground for very high accuracy requirements.
Tolerance: Radius contour = **±0.005 mm.**
Improved cutting edge protection thanks to slight edge honing. Tremendous bending strength due to the use of ultra-fine grain substrate.

20 7242

20 7244

20 7246

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	K						
20 7242				270	240	220	190	170	140					90	80		400	●		●	○	●	●
20 7244				260	230	210	180	160	130					85	75		350	●		●	○	●	●
20 7246				250	220	200	170	150	120					75	70		300	●		●	○	●	●

Ø f8 D_c / D_s	11X 20 7242	11X 20 7244	11X 20 7246	L_s	L_{tot}				< 900 N f_z	< 900 N f_z
	GARANT Master Steel solid carbide ball nose slot drill									
	HPC									
mm	TiAlN	TiAlN	TiAlN	mm	20 7242 mm	20 7244 mm	20 7246 mm	mm	mm	mm
0,1	XXX	–	–	0.2	38	–	–	3	0.005	0.007
0,2	XXX	–	–	0.4	38	–	–	3	0.005	0.007
0,25	XXX	–	–	0.5	38	–	–	3	0.005	0.007
0,4	XXX	–	–	1	38	–	–	3	0.005	0.007
0,5	XXX	–	–	1	38	–	–	3	0.008	0.01
0,5/6	XXX	–	–	1.5	54	–	–	6	0.008	0.01
0,6	XXX	–	–	1.5	38	–	–	3	0.008	0.01
0,7	XXX	–	–	1.5	38	–	–	3	0.008	0.01
0,8	XXX	–	–	2	38	–	–	3	0.008	0.01
0,9	XXX	–	–	2	38	–	–	3	0.008	0.01
1	XXX	–	–	2.5	50	–	–	3	0.012	0.015
1/6	XXX	XXX	–	2	54	80	–	6	0.012	0.015
1,1	XXX	–	–	2	50	–	–	3	0.012	0.015
1,2	XXX	–	–	3	50	–	–	3	0.012	0.015
1,4	XXX	–	–	3	50	–	–	3	0.012	0.015
1,5	XXX	–	–	3	50	–	–	3	0.012	0.015
1,5/6	XXX	XXX	–	3	54	80	–	6	0.02	0.025
1,6	XXX	–	–	4	50	–	–	3	0.025	0.03
1,8	XXX	–	–	4	50	–	–	3	0.025	0.03
2	XXX	–	–	4	50	–	–	3	0.03	0.04
2/6	XXX	XXX	–	4	54	80	–	6	0.03	0.04
2,5	XXX	–	–	5	50	–	–	3	0.03	0.04
2,5/6	XXX	XXX	–	5	54	80	–	6	0.03	0.04
3	XXX	XXX	XXX	5	50	75	100	3	0.04	0.06
3/6	XXX	XXX	–	5	54	80	–	6	0.04	0.06
4	XXX	XXX	XXX	8	54	75	100	4	0.04	0.06
4/6	XXX	XXX	–	8	54	80	–	6	0.04	0.06
5	XXX	XXX	XXX	9	54	75	100	5	0.04	0.06
5/6	XXX	XXX	–	9	54	100	–	6	0.06	0.08
6	XXX	XXX	XXX	10	54	100	120	6	0.06	0.08
7	XXX	–	–	12	58	–	–	8	0.08	0.1
8	XXX	XXX	XXX	12	58	100	120	8	0.1	0.12
9	XXX	–	–	14	66	–	–	10	0.1	0.12
10	XXX	XXX	XXX	14	66	100	120	10	0.1	0.12
12	XXX	XXX	XXX	16	73	100	150	12	0.1	0.12
14	XXX	–	–	18	75	–	–	14	0.1	0.12
16	XXX	XXX	–	22	82	150	–	16	0.12	0.15
20	XXX	–	–	26	92	–	–	20	0.15	0.2

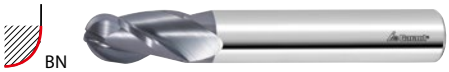
Solid carbide | Standard | 3 | h6 DIN 6535 HA

Garant® Solid carbide ball nose slot drill / Diabolo HPC solid carbide ball nose slot drill

20 7381 – Tolerance: Radius contour = **±0.01 mm.**

20 7424 – Special geometry, coating and carbide for hard machining.
3 end face edges up to the centre.
Can therefore be used as a true 3-flute drill in all cutting depths.
Tolerance: Radius contour = **±0.005 mm.**

Type N | e8 | 35° | a_e 0.5×D | a_e 0.1×D



20 7381

Type H | f8 | 30° | a_e 0.2×D | a_e 0.05×D | HPC

20 7424

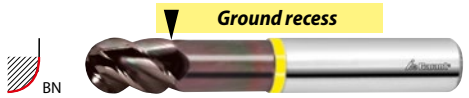
Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 50 HRC	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	H	M	M	S	K					
20 7381				160	140	130									80	70	50	120		●	○	○	○
20 7424								200	190	170	150	110								○	○	●	●

∅ e8 D_c	11X 20 7381	11X 20 7424	L_s		L_{tot}			< 500 N f_z	< 65 HRC f_z	< 500 N f_z	< 65 HRC f_z
	Solid carbide ball nose slot drill	Diabolo solid carbide ball nose slot drill HPC	20 7381	20 7424	20 7381	20 7424		20 7381	20 7424	20 7381	20 7424
mm	TiAlN	TiAlN	mm	mm	mm	mm	mm	mm	mm	mm	mm
3	XXX	XXX	7	8	57	65	6	0.011	0.019	0.013	0.019
4	XXX	XXX	8	8	57	75	6	0.023	0.019	0.025	0.019
5	XXX	XXX	10	10	57	75	6	0.023	0.048	0.025	0.048
6	XXX	XXX	10	12	57	100	6	0.033	0.048	0.037	0.048
8	XXX	XXX	16	14	63	100	8	0.045	0.06	0.051	0.06
10	XXX	XXX	19	18	72	100	10	0.06	0.07	0.068	0.07
12	XXX	XXX	22	22	83	120	12	0.08	0.08	0.09	0.08
16	XXX	–	26	–	92	–	16	0.1	–	0.113	–
18	XXX	–	26	–	92	–	18	0.1	–	0.113	–

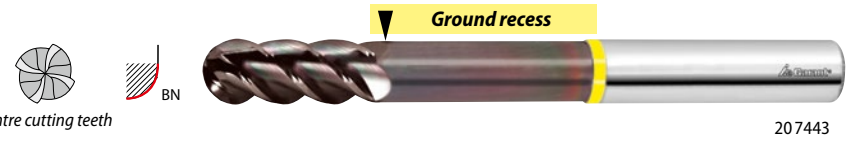
Solid carbide | Standard | Type W | f8 | 4 | 45° | a_e 0.1×D | h6 DIN 6535 HA

Garant® Solid carbide ball nose slot drill

With **the latest generation of DLC coating sp²**.
For **high-performance milling of aluminium materials.**
4 centre cutting edges to the centre.
Can therefore be used as a true **4-edge drill** in all cutting depths;
for hardened steel.
Tolerance: Radius contour = **±0.005 mm.**



20 7441



20 7443

Suitable for/ v_c [m/min]	Alu	Alu	Alu cast > 10 % Si	PMMA acrylic	PE-HD	PA 66	PEEK	PF 31	AFRP aramid	PVDF GF20	POM GF25	PA 66 GF30	PEEK GF30	PTFE CF25	PEEK CF30	Honey-comb sandwich	Cu	CuZn					
ISO code	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N					
20 7441	600	550	500	220	180	220	170	150		200	180	170	140	180		320	180	220		●	●	○	●
20 7443	500	450	400	200	160	200	150	130		180	160	150	120	160		300	160	200		●	●	○	●

∅ f8 D_c	11X 20 7441	11X 20 7443	L_s		L_4		∅ D_4	L_{tot}			Alu cast > 10 % Si f_z
	Solid carbide ball nose slot drill		20 7441	20 7443	20 7441	20 7443		20 7441	20 7443		
mm	DLC	DLC	mm	mm	mm	mm	mm	mm	mm	mm	mm
3	XXX	XXX	6	10	16	32	2.7	50	75	3	0.03
4	XXX	XXX	7	13	17	36	3.7	54	75	4	0.03
5	XXX	XXX	8	15	18	40	4.6	54	75	5	0.06
6	XXX	XXX	10	16	21	44	5.5	54	100	6	0.06
8	XXX	XXX	12	22	27	54	7.5	59	100	8	0.06
10	XXX	XXX	13	25	32	60	9.4	67	100	10	0.08
12	XXX	XXX	16	26	38	60	11.4	73	100	12	0.08
16	XXX	XXX	20	30	44	92	15	83	150	16	0.15
20	XXX	XXX	25	40	50	92	19	93	150	20	0.2

Solid carbide | DIN 6527 | Type N | f8 | 4 | 45° | a_e 0.3×D | a_e 0.03×D | h6 DIN 6535 HA | MTC

Garant Solid carbide ball nose slot drill MTC

Ball nose slot drills with corrected cutting form, without profile distortion.
With double relief ground side clearance angle.
Tolerance: Radius contour = **±0.005 mm.**

Application: Especially for **MTC (Multi Task Cutting)** use on the new generation of turning / milling centres.

207450

207460

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	K						
207450/7460				225	210	180	145	140						85			350	●		●	○	○	○

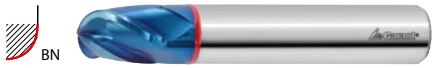
Ø f8 D_C	11X 207450	11X 207460	L_s	L_{tot}			< 900 N f_z	< 900 N f_z
	Solid carbide ball nose slot drill							
	MTC			207450	207460			
mm	TiAlN	TiAlN	mm	mm	mm	mm	mm	mm
3	XXX	XXX	5	50	75	3	0.009	0.011
4	XXX	XXX	8	54	75	4	0.03	0.037
5	XXX	XXX	9	54	75	5	0.03	0.037
6	XXX	XXX	10	54	100	6	0.041	0.051
8	XXX	XXX	12	58	100	8	0.05	0.06
10	XXX	XXX	14	66	100	10	0.058	0.071
12	XXX	XXX	16	73	100	12	0.068	0.084
14	XXX	–	18	75	–	14	0.095	0.117
16	XXX	XXX	22	82	150	16	0.095	0.117
20	XXX	XXX	26	92	150	20	0.112	0.138

Solid carbide | Standard | Type H | f8 | 4 | 30° | a_e 0.2×D | a_e 0.05×D | h6 DIN 6535 HA | HPC

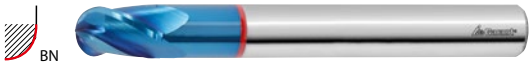
Garant Diabolo solid carbide ball nose slot drills HPC

GARANT Diabolo:
Special geometry, newly developed coating and carbide for hard machining.
4 centre cutting edges to the centre.
Therefore can be used as a true **4-edge drill** at all depths of cut.
Tolerance: Radius contour = **±0.005 mm.**

Centre cutting teeth



207472



207476

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 50 HRC	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	Graphite GRP CRP					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	H	M	M	S	N					
207472/7476								200	190	170	150	110								○	○	●	●

Ø f8 D_C / D_S	11X 207472	11X 207476	L_s	L_{tot}			< 65 HRC f_z	< 65 HRC f_z
	Diabolo solid carbide ball nose slot drill							
	HPC			207472	207476			
mm	TiAlN	TiAlN	mm	mm	mm	mm	mm	mm
2	XXX	–	4	50	–	3	0.005	0.005
2/6	XXX	XXX	4	54	80	6	0.005	0.005
2,5/6	–	XXX	5	–	80	6	0.019	0.019
3	XXX	XXX	5	50	75	3	0.019	0.019
3/6	XXX	XXX	5	54	80	6	0.019	0.019
4	XXX	XXX	8	54	75	4	0.019	0.019
4/6	XXX	XXX	8	54	80	6	0.019	0.019
5	XXX	XXX	9	54	75	5	0.048	0.048
5/6	XXX	XXX	9	54	100	6	0.048	0.048
6	XXX	XXX	10	54	100	6	0.048	0.048
7	XXX	–	12	58	–	8	0.06	0.06
8	XXX	XXX	12	58	100	8	0.06	0.06
9	XXX	–	14	66	–	10	0.07	0.07
10	XXX	XXX	14	66	100	10	0.07	0.07
12	XXX	XXX	16	73	100	12	0.08	0.08
16	XXX	XXX	22	82	150	16	0.09	0.09
20	XXX	XXX	26	92	150	20	0.1	0.1

Solid carbide | Standard | Type N | f8 | 4 | 45° | a_e 0.5×D | a_e 0.05×D | h6 DIN 6535 HA | HPC

GARANT Master INOX HPC solid carbide ball nose slot drill

HPC milling cutters with **newly developed high-performance coating** for **outstanding service life** and **optimum metal removal rates** in a wide range of stainless steels.
Greater oxidation resistance and **high-temperature hardness**.
Can be used at **high cutting speeds**, particularly suitable even for TOOLOX®.
Tolerance: Radius contour = **±0.005 mm.**

20 7473

20 7474

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	TOOLOX® 33 HRC	TOOLOX® 44 HRC	INOX < 900 N	INOX > 900 N	Uni
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	H	H	M	M	
20 7473/7474				250	230	200	180	170						115	80	110	90	○

Ø f8 D_c / D_s	11X 20 7473	11X 20 7474	L_s	L_{tot}			INOX < 900 N f_z	INOX < 900 N f_z
	GARANT Master INOX solid carbide ball nose slot drill HPC			20 7473	20 7474			
mm	TiAlN	TiAlN	mm	mm	mm	mm	mm	mm
2	XXX	XXX	4	50	60	3	0.006	0.007
2/6	XXX	XXX	4	54	80	6	0.006	0.007
3	XXX	XXX	5	50	60	3	0.006	0.007
3/6	XXX	XXX	5	54	80	6	0.006	0.007
4	XXX	XXX	8	54	80	4	0.012	0.013
4/6	XXX	XXX	8	54	80	6	0.012	0.013
5	XXX	XXX	9	54	80	5	0.012	0.013
5/6	XXX	XXX	9	54	80	6	0.012	0.013
6	XXX	XXX	10	54	100	6	0.017	0.019
8	XXX	XXX	12	58	100	8	0.025	0.028
10	XXX	XXX	14	66	100	10	0.032	0.036
12	XXX	XXX	16	73	100	12	0.045	0.051
16	XXX	XXX	20	82	120	16	0.06	0.068
20	XXX	XXX	26	92	120	20	0.075	0.084

Solid carbide | Standard | Type N | f8 | 4 | 45° | a_e 0.5×D | a_e 0.05×D | h6 DIN 6535 HA | HPC

Solid carbide ball nose slot drill HPC

Special geometry and **coating** for machining **stainless and acid-resistant steels.** 4 end faces up to the centre.
Therefore can be used as a true **4-edge drill** at all depths of cut.
Tolerance: Radius contour = **±0.005 mm.**

Centre cutting teeth

20 7477

20 7478

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	Graphite GRP CRP	Uni
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	N	
20 7477/7478				250	230	200	160							95	85			

Ø f8 D_c / D_s	11X 20 7477	11X 20 7478	L_s	L_{tot}			INOX < 900 N f_z	INOX < 900 N f_z
	Solid carbide ball nose slot drill HPC			20 7477	20 7478			
mm	TiAlN	TiAlN	mm	mm	mm	mm	mm	mm
2	XXX	–	4	50	–	3	0.006	0.007
2/6	XXX	XXX	4	54	80	6	0.006	0.007
3	XXX	–	5	50	–	3	0.006	0.007
3/6	XXX	XXX	5	54	80	6	0.006	0.007
4	XXX	–	8	54	–	4	0.012	0.013
4/6	XXX	XXX	8	54	80	6	0.012	0.013
5	XXX	–	9	54	–	5	0.012	0.013
5/6	XXX	XXX	9	54	80	6	0.012	0.013
6	XXX	XXX	10	54	100	6	0.017	0.019
8	XXX	XXX	12	58	100	8	0.025	0.028
10	XXX	XXX	14	66	100	10	0.032	0.036
12	XXX	XXX	16	73	100	12	0.045	0.051
16	XXX	–	20	82	–	16	0.06	0.068
20	XXX	–	26	92	–	20	0.075	0.084

Solid carbide | Standard | Type N | f8 | 4 | 45° | a_e 0.5×D | a_e 0.05×D | h6 DIN 6535 HA | HPC

Garant® Solid carbide ball nose slot drill HPC

Special geometry for machining **titanium and titanium alloys.**
4 centre cutting edges to the centre.
Therefore can be used as a true **4-edge drill** at all depths of cut.
Tolerance: Radius contour = **±0.005 mm.**

Centre cutting edges.

20 7480
20 7485

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	Inconel®	Graphite GRP CRP					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	S	N					
20 7480																55	35		●				
20 7485																50	30		●				

Ø f8 D_C / D_S	11X 20 7480	11X 20 7485	L_s	L_{tot}			Ti > 850 N f_z	Ti > 850 N f_z
	Solid carbide ball nose slot drill HPC			20 7480	20 7485			
mm	TiAlN	TiAlN	mm	mm	mm	mm	mm	mm
2/6	XXX	XXX	4	54	80	6	0.008	0.01
3/6	XXX	XXX	5	54	80	6	0.008	0.01
4/6	XXX	XXX	8	54	80	6	0.016	0.02
5/6	XXX	XXX	9	54	80	6	0.016	0.02
6	XXX	XXX	10	54	100	6	0.024	0.03
8	XXX	XXX	12	58	100	8	0.032	0.039
10	XXX	XXX	14	66	100	10	0.04	0.048
12	XXX	XXX	16	73	100	12	0.05	0.057

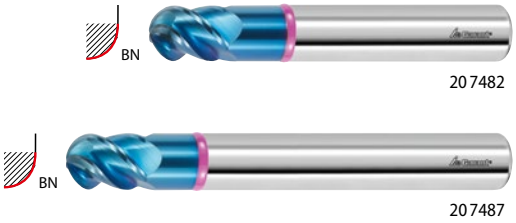
Solid carbide | Standard | Type N | f8 | 4 | 45° | a_e 0.5×D | a_e 0.05×D | h6 DIN 6535 HA | HPC

Garant® GARANT Master Titan HPC solid carbide ball nose slot drill

Special geometry for machining **titanium and titanium alloys.**
4 centre cutting edges to the centre.
Therefore can be used as a **true 4-edge cutter** at all depths of cut.
Tolerance: Radius contour = **±0.005 mm.**

Note: Regrinding not recommended.

Centre cutting edges.



20 7482
20 7487

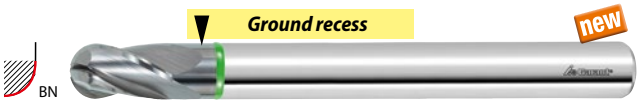
Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	Graphite GRP CRP	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	N						
20 7482																55			●				
20 7487																45			●				

Ø f8 D_C / D_S	11Z 20 7482	11Z 20 7487	L_s	L_{tot}			Ti > 850 N f_z	Ti > 850 N f_z
	GARANT Master Titan solid carbide ball nose slot drill HPC			20 7482	20 7487			
mm	TiAlN	TiAlN	mm	mm	mm	mm	mm	mm
1	XXX	XXX	2	54	80	6	0.009	0.012
2	XXX	XXX	4	54	80	6	0.01	0.012
3	XXX	XXX	5	54	80	6	0.01	0.014
4	XXX	XXX	8	54	80	6	0.012	0.016
5	XXX	XXX	9	54	80	6	0.012	0.016
6	XXX	XXX	10	54	80	6	0.018	0.024
8	XXX	XXX	12	58	100	8	0.03	0.038
10	XXX	XXX	14	66	100	10	0.033	0.042
12	XXX	XXX	16	73	100	12	0.04	0.047

Solid carbide | Standard | Type N | f8 | 4 | 30° | a_e 0.3×D | a_e 0.03×D | h6 DIN 6535 HA | HPC

GARANT Master Steel solid carbide ball nose slot drill

Precision ground for very high accuracy requirements.
Tolerance: Radius contour = **±0.005 mm.**
Improved cutting edge protection thanks to slight edge honing.
Tremendous bending strength due to the use of ultra-fine grain substrate.



207490

207492

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	Uni
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	K	
207490/7492				270	240	220	190	170	140					90	80		400	●

Ø f8 D_c	11X 207490	11X 207492	L_3	L_4	Ø D_4	L_{tot}			< 900 N f_z	< 900 N f_z
	GARANT Master Steel solid carbide ball nose slot drill HPC					207490	207492			
mm	TiAlN	TiAlN	mm	mm	mm	mm	mm	mm	mm	mm
2	XXX	–	4	16	1.8	50	–	4	0.015	0.02
3	XXX	XXX	5	16	2.8	50	75	4	0.02	0.025
4	XXX	XXX	8	18	3.8	50	75	4	0.03	0.035
5	XXX	XXX	9	18	4.8	50	75	6	0.035	0.04
6	XXX	XXX	10	21	5.8	57	100	6	0.045	0.05
8	XXX	XXX	12	27	7.8	63	100	8	0.06	0.065
10	XXX	XXX	14	32	9.5	72	100	10	0.065	0.07
12	XXX	XXX	16	38	11.5	83	150	12	0.07	0.075
14	XXX	–	18	44	13.5	83	–	14	0.1	0.12
16	XXX	XXX	22	44	15.5	92	150	16	0.1	0.12
20	XXX	–	26	50	19.5	104	–	20	0.15	0.18

Solid carbide | DIN 6527 | HR | d11 | 45° | a_e 0.5×D | a_e 0.05×D | h6 DIN 6535 HB

Solid carbide ball nose roughing end mill

Round **knuckle profile** for roughing, **including machining radii**.

Note:	**Successor product to No. 207512**

207505

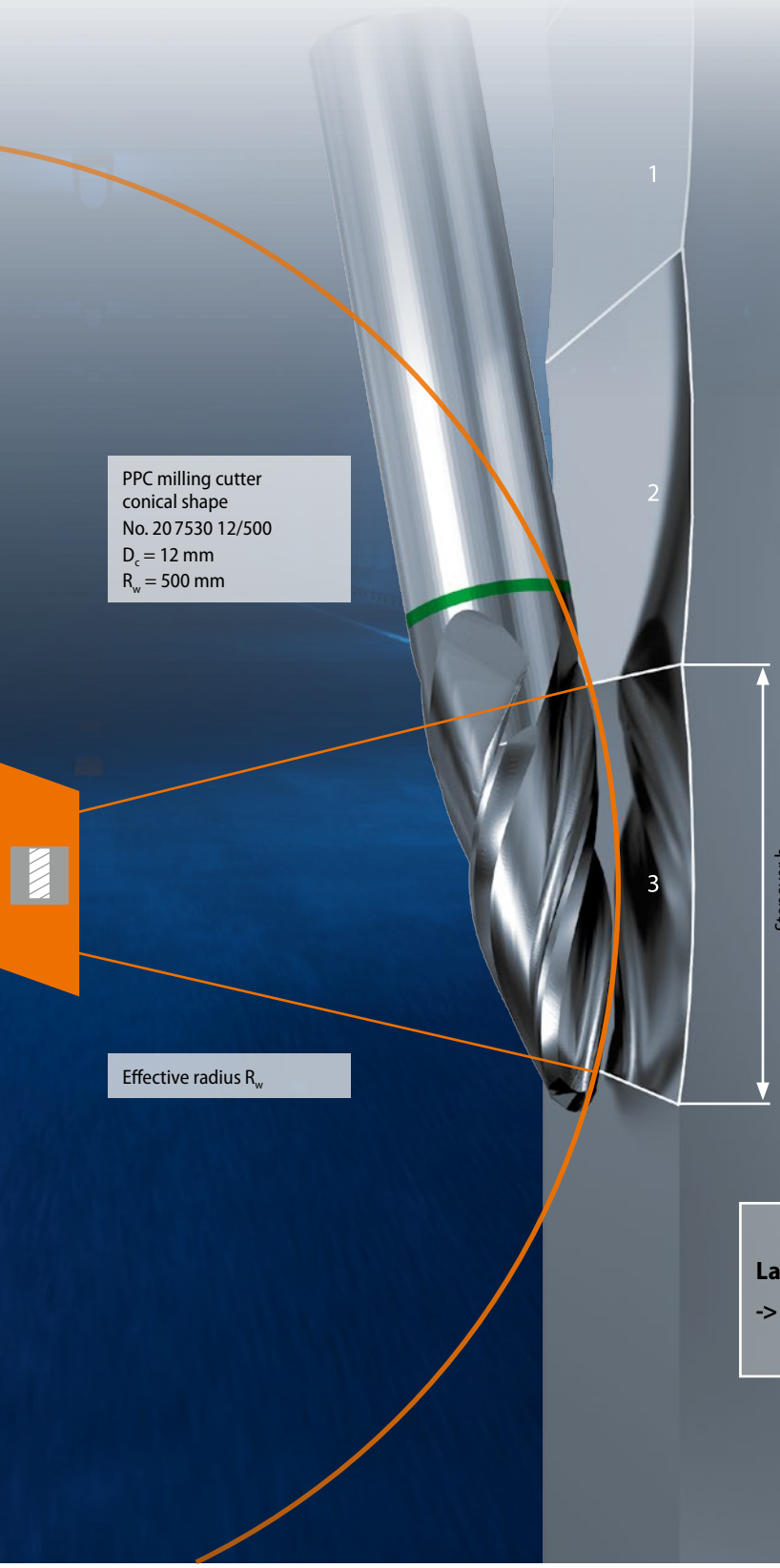
207507

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	Uni
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	K	
207505/7507		350	250	160	140	130	80							80			120	●

Ø d11 D_c	11X 207505	11X 207507	L_3	L_{tot}		< 900 N f_z	< 900 N f_z
	Solid carbide ball nose roughing end mill						
mm	TiAlN	TiAlN	mm	mm	mm	mm	mm
5	XXX	XXX	13	57	6	0.023	0.025
6	XXX	XXX	13	57	6	0.033	0.037
8	XXX	XXX	16	63	8	0.045	0.051
10	XXX	XXX	22	72	10	0.06	0.068
12	XXX	XXX	26	73	12	0.08	0.09
14	XXX	XXX	26	83	14	0.08	0.09
16	XXX	XXX	32	92	16	0.1	0.113
18	XXX	XXX	32	92	18	0.1	0.113
20	XXX	XXX	38	104	20	0.12	0.135

Dynamic 5-axis milling
Reduce process times and increase surface quality

Optimised product range
HARD milling



PPC milling cutter
conical shape
No. 20 7530 12/500
D_c = 12 mm
R_w = 500 mm

Effective radius R_w

PPC

Advantages of the PPC process:

- Shorter machining times due to the larger stepover.
- Lower set-up costs.
- Higher surface qualities at shorter cycle times.
- Outstanding process reliability.
- Extreme wear resistance.
- Increased productivity.

The right tool
for every application

Large stepover
-> Short machining times. Improve surface qualities.

Solid carbide | Standard | Type N | f8 | 30° | a_e 0.05×D | a_e 0.05×D | h6 DIN 6535 HA | PPC

Garant Solid carbide barrel milling cutters, PPC

High-performance tool for **exceptionally efficient finish machining of free-form surfaces.**
For outstanding surface qualities in a **very short machining time.**
For use on modern 5-axis milling machines with CAD / CAM support.

Recommendation: We recommend 0.05 to 0.2mm as an allowance for finishing operations.

Note: R_W represents the effective radius on the tool.
Cannot be reground!

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	Inconel®	GG(G)	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	M	M	S	S	K						
20 7514/7517/7529 7531/7533/7542 7545/7548	330	300	230																●	○	○	●	
20 7520/7525/7530 7532/7534/7543 7546/7549		200	200	250	200	180	150	130	90				130	120	60		300	●	●	○	○	○	
20 7523/7540/7541 7544/7551/7553								200	170	150	110								○		●	●	
20 7535–20 7539		200	200										150	140	70	60			●	○	○	○	

Solid carbide barrel milling cutters, tangential form

The end face geometry is designed so that the chips, especially those formed by the end radius, are of optimum shape and have optimum evacuation characteristics. For this purpose the number of cutting edges is reduced to the number of effective end face cutting edges.

20 7523 – Innovative coating concept for **machining hardened materials.**

20 7517

20 7523

20 7525

Ø f8 D_c / R_w	11X	20 7517	L_s	R_W	RS_1	L_{tot}		Alu f_z	Alu f_z
		Solid carbide barrel milling cutter, tangential form							
		PPC							
mm		DLC	mm	mm	mm	mm	mm	mm	mm
6/100		XXX	20.5	100	1	62	6	0.04	0.05
10/90		XXX	24.5	90	2	80	10	0.06	0.08
12/85		XXX	27	85	2	93	12	0.07	0.09

Ø f8 D_c / R_w	11X	20 7523	No. of teeth Z	L_s	R_W	RS_1	L_{tot}		< 60 HRC f_z	< 60 HRC f_z
		Solid carbide barrel milling cutter, tangential form								
		PPC								
mm		DLC		mm	mm	mm	mm	mm	mm	mm
6/45		XXX	4	14	45	1	60	6	0.02	25
8/45		XXX	4	16	45	1.5	80	8	0.025	0.03
10/40		XXX	6	16.5	40	2	80	10	0.03	0.035
12/40		XXX	6	18.5	40	2	90	12	0.035	0.04

Ø f8 D_c / R_w	11X	20 7525	L_s	R_W	RS_1	L_{tot}		< 900 N f_z	< 900 N f_z
		Solid carbide barrel milling cutter, tangential form							
		PPC							
mm		TiAlN	mm	mm	mm	mm	mm	mm	mm
6/100		XXX	20.5	100	1	62	6	0.04	0.05
8/95		XXX	22	95	1.5	70	8	0.05	0.06
10/90		XXX	24.5	90	2	80	10	0.06	0.08
12/85		XXX	27	85	2	93	12	0.07	0.09

Solid carbide barrel milling cutters, conical form

The end face geometry is designed so that the chips, especially those formed by the end radius, are of optimum shape and have optimum evacuation characteristics. For this purpose the number of cutting edges is reduced to the number of effective end face cutting edges.

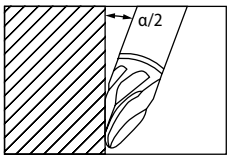
20 7540–7544 – Innovative coating concept for **machining hardened materials.**

Note: For machining walls and overcoming obstructions.

20 7531

20 7541

20 7537



20 7532

Ø f8 D_c / R_w	20 7529	20 7531	20 7533	No. of teeth Z	L_s		R_w	RS_1		L_{tot}		Alu f_z	Alu f_z
	Solid carbide barrel milling cutter, conical form α/2=9°	Solid carbide barrel milling cutter, conical form α/2=18°	Solid carbide barrel milling cutter, conical form α/2=27°										
	PPC				20 7529 20 7533	20 7531		20 7529 20 7533	20 7531				
mm	DLC	DLC	DLC		mm	mm	mm	mm	mm	mm	mm	mm	mm
6/250	–	XXX	–	4	–	8	250	–	0.5	60	6	0.04	0.05
12/500	XXX	XXX	–	4	22	14.5	500	3	2	90	12	0.07	0.09
16/1000	–	XXX	XXX	4	12.5	16	1000	3	4	90	16	0.09	0.11

Ø f8 D_c / R_w	20 7540	20 7541	20 7544	No. of teeth Z	L_s		R_w	RS_1		L_{tot}		< 60 HRC f_z	< 60 HRC f_z
	Solid carbide barrel milling cutter, tangential form α/2 = 9°	Solid carbide barrel milling cutter, tangential form α/2 = 18°	Solid carbide barrel milling cutter, tangential form α/2 = 27°										
	PPC				20 7540 20 7544	20 7541		20 7540 20 7544	20 7541				
mm	TiAlN	TiAlN	TiAlN		mm	mm	mm	mm	mm	mm	mm	mm	mm
6/100	–	XXX	–	4	–	8.5	100	–	0.5	60	6	0.02	0.025
12/200	XXX	XXX	–	6	22	14.5	200	3	2	90	12	0.035	0.04
16/300	–	XXX	XXX	6	12.5	16	300	3	4	90	16	0.05	0.06

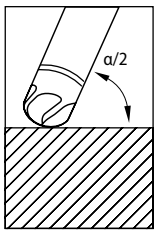
Ø f8 D_c / R_w	20 7535	20 7537	20 7539	No. of teeth Z	L_s		R_w	RS_1		L_{tot}		INOX > 900 N f_z	INOX > 900 N f_z
	Solid carbide barrel milling cutter, conical form α/2 = 9°	Solid carbide barrel milling cutter, conical form α/2 = 18°	Solid carbide barrel milling cutter, conical form α/2 = 27°										
	PPC				20 7535 20 7539	20 7537		20 7535 20 7539	20 7537				
mm	TiAlN	TiAlN	TiAlN		mm	mm	mm	mm	mm	mm	mm	mm	mm
12/500	XXX	XXX	–	6	22	14.5	500	3	2	90	12	0.052	0.064
16/1000	–	XXX	XXX	6	12.5	16	1000	3	4	90	16	0.065	0.08

Ø f8 D_c / R_w	20 7530	20 7532	20 7534	No. of teeth Z	L_s		R_w	RS_1		L_{tot}		< 900 N f_z	< 900 N f_z
	Solid carbide barrel milling cutter, conical form α/2 = 9°	Solid carbide barrel milling cutter, conical form α/2 = 18°	Solid carbide barrel milling cutter, conical form α/2 = 27°										
	PPC				20 7530 20 7534	20 7532		20 7530 20 7534	20 7532				
mm	TiAlN	TiAlN	TiAlN		mm	mm	mm	mm	mm	mm	mm	mm	mm
6/250	–	XXX	–	4	–	8	250	–	0.5	60	6	0.04	0.05
12/500	XXX	XXX	–	4	22	14.5	500	3	2	90	12	0.07	0.09
16/1000	–	XXX	XXX	4	12.5	16	1000	3	4	90	16	0.09	0.11

Solid carbide barrel milling cutter, short conical form

20 7551/7553 – Innovative coating concept for **machining hardened materials.**

Note: For surface machining and avoidance of interference contours.



20 7542

20 7553

20 7543

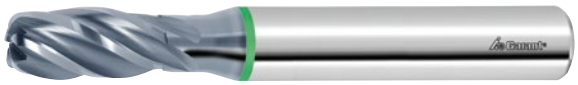
Ø f8 D_c / R_w	11X 20 7542	11X 20 7545	11X 20 7548	No. of teeth Z	L_s			R_w	RS_1		L_{tot}		Alu f_z	Alu f_z
	Solid carbide barrel milling cutter, short conical form α/2 = 63°	Solid carbide barrel milling cutter, short conical form α/2 = 72°	Solid carbide barrel milling cutter, short conical form α/2 = 81°		20 7542	20 7545	20 7548		20 7542 20 7545	20 7548				
	PPC													
mm	DLC	DLC	DLC		mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
8/180	XXX	XXX	XXX	3	2.4	1.9	1.4	180	1.5	3	80	8	0.055	0.065
12/220	XXX	XXX	XXX	5	3.5	2.5	1.4	220	2	4	120	12	0.07	0.09

Ø f8 D_c / R_w	11X 20 7551	11X 20 7553	No. of teeth Z	L_s		R_w	RS_1		L_{tot}		< 60 HRC f_z	< 60 HRC f_z
	Solid carbide barrel milling cutter, short conical form α/2 = 72°	Solid carbide barrel milling cutter, short conical form α/2 = 81°		20 7551	20 7553		20 7551	20 7553				
	PPC											
mm	DLC	TiAlN		mm	mm	mm	mm	mm	mm	mm	mm	mm
12/100	XXX	XXX	5	2.5	1.7	100	2	4	100	12	0.035	0.04

Ø f8 D_c / R_w	11X 20 7543	11X 20 7546	11X 20 7549	No. of teeth Z	L_s			R_w	RS_1		L_{tot}		< 900 N f_z	< 900 N f_z
	Solid carbide barrel milling cutter, short conical form α/2 = 63°	Solid carbide barrel milling cutter, short conical form α/2 = 72°	Solid carbide barrel milling cutter, short conical form α/2 = 81°		20 7543	20 7546	20 7549		20 7543 20 7546	20 7549				
	PPC													
mm	TiAlN	TiAlN	TiAlN		mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
8/180	XXX	XXX	XXX	3	2.4	1.9	1.4	180	1.5	3	80	8	0.055	0.065
12/220	XXX	XXX	XXX	5	3.5	2.5	1.4	220	2	4	120	12	0.07	0.09

Solid carbide barrel milling cutters, straight form

20 7514



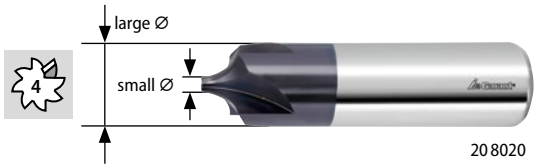
20 7520

Ø f8 D_c / R_w	11X 20 7514	11X 20 7520	L_s	R_w	RS_1	L_4	Ø D_4	L_{tot}		Alu f_z 20 7514	< 900 N f_z 20 7520	Alu f_z 20 7514	< 900 N f_z 20 7520
	Solid carbide barrel milling cutter, straight form												
	PPC												
mm	DLC	TiAlN	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
10/60	XXX	XXX	21.5	60	1	30	8	72	10	0.06	0.06	0.08	0.08
12/70	XXX	XXX	23	70	1	36	10	83	12	0.07	0.07	0.09	0.09

Solid carbide | Standard | Type N | ±0.01 | h6 DIN 6535 HA | R

Garant Solid carbide corner rounding cutter / solid carbide corner rounding cutter HPC

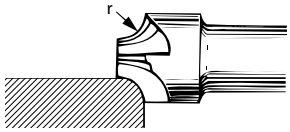
Straight fluted, without profile distortion.
Tolerance: **r = ±0.01 mm.**
Application: For rounding and deburring **edges.**



20 8020

HPC 3 4 5

20 8021



HPC 6

20 8023

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	K						
20 8020	800	600	400	190	170	160	95							90	75		120	●		●	○	○	○
20 8021/8023	800	600	400	200	180	170	100							90	80					●	○	●	●

11X **20 8020** — Solid carbide corner rounding cutter

Radius r	small Ø	large Ø	L_{tot}		L_s	< 900 N f_z
mm	TiAlN	mm	mm	mm	mm	mm	mm
0,2	XXX	5.6	6	58	6	0.2	0.002
0,3	XXX	5.4	6	58	6	0.3	0.002
0,4	XXX	5.2	6	58	6	0.4	0.002
0,5	XXX	7	8	70	8	0.5	0.004
0,6	XXX	6.8	8	70	8	0.6	0.004
0,8	XXX	6.4	8	70	8	0.8	0.004
1	XXX	6	8	70	8	1	0.008
1,5	XXX	7	10	75	10	1.5	0.008
2	XXX	6	10	75	10	2	0.016
2,5	XXX	7	12	75	12	2.5	0.016
3	XXX	6	12	75	12	3	0.016
3,5	XXX	9	16	80	16	3.5	0.016
4	XXX	8	16	80	16	4	0.032
4,5	XXX	7	16	80	16	1.5	0.032
5	XXX	10	20	80	20	5	0.032
6	XXX	8	20	80	20	6	0.054
8	XXX	9	25	100	25	8	0.063
10	XXX	5	25	100	25	10	0.072

11X **20 8021** 11X **20 8023** — Solid carbide corner rounding cutter, HPC

Radius r	TiAlN	TiAlN	No. of teeth Z		small Ø		large Ø		L_{tot}				< 900 N f_z	
			20 8021	20 8023	20 8021	20 8023	20 8021	20 8023	20 8021	20 8023	20 8021	20 8023	20 8021	20 8023
mm					mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
0,2	XXX	XXX	3	6	0.5	5.6	1	6	50	58	3	6	0.01	0.02
0,25	XXX	–	3	–	0.5	–	1	–	50	–	3	–	0.01	–
0,3	XXX	XXX	3	6	0.5	5.4	1.2	6	50	58	3	6	0.01	0.02
0,4	XXX	XXX	3	6	0.5	5.2	1.4	6	50	58	3	6	0.01	0.02
0,5	XXX	XXX	3	6	0.5	7	1.6	8	50	70	3	8	0.01	0.02
0,6	XXX	XXX	3	6	0.5	6.8	1.8	8	50	70	3	8	0.01	0.02
0,7	XXX	–	3	–	0.5	–	2.1	–	50	–	3	–	0.01	–
0,8	XXX	XXX	3	6	0.8	6.4	2.5	8	50	70	3	8	0.01	0.025
0,9	XXX	–	3	–	0.8	–	2.9	–	50	–	3	–	0.01	–
1	XXX	XXX	3	6	0.8	6	2.9	8	50	70	3	8	0.01	0.025
1,25	XXX	–	4	–	0.8	–	3.4	–	50	–	6	–	0.02	–
1,5	XXX	XXX	4	6	1.5	7	4.6	10	50	75	6	10	0.02	0.03
1,75	XXX	–	4	–	1.5	–	5.6	–	50	–	6	–	0.02	–
2	XXX	XXX	4	6	1.5	6	5.6	10	50	75	6	10	0.02	0.03
2,25	XXX	–	5	–	1.5	–	6.6	–	50	–	8	–	0.02	–
2,5	XXX	XXX	5	6	1.5	7	6.6	12	50	75	8	12	0.02	0.035
3	–	XXX	–	6	–	6	–	12	–	75	–	12	–	0.035
3,5	–	XXX	–	6	–	9	–	16	–	80	–	16	–	0.04
4	–	XXX	–	6	–	8	–	16	–	80	–	16	–	0.04
4,5	–	XXX	–	6	–	7	–	16	–	80	–	16	–	0.04
5	–	XXX	–	6	–	10	–	20	–	80	–	20	–	0.05
6	–	XXX	–	6	–	8	–	20	–	80	–	20	–	0.06
8	–	XXX	–	6	–	9	–	25	–	100	–	25	–	0.07
10	–	XXX	–	6	–	5	–	25	–	100	–	25	–	0.07

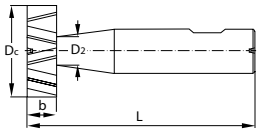
Solid carbide | DIN 850 D/F | e8 | h6 DIN 6535 HB | Type N | Type NF | 6 | 8 | 10

Garant® Solid carbide high performance Woodruff keyseating cutter

Peripheral cutting, alternate set teeth (staggered). The sides of the teeth are ground to give clearance and thus cannot jam in the component.

Size 38,5×10; 45,5×10 – With chip separators – type NF.

Note: For milling Woodruff keyways to DIN 6888 or for milling small slots.
Slot milled from solid: f_z for $a_p = 0.25 \times D$.



Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	Graphite GRP CRP	Uni
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	N	
20 8025				70	67	65	63	60						40				●

Ø×width h11×e8 D_C×b	11X 20 8025 Solid carbide Woodruff keyseating cutter	No. of teeth Z	for Woodruff keyways to DIN 6888	Ø D_2	L_{tot}		< 900 N f_z
mm	TiAlN		mm	mm	mm	mm	mm
10,5×2	XXX	6	2.0×3.7	4	50	6	0.035
10,5×3	XXX	6	3.0×3.7	4.2	50	6	0.035
13,5×2	XXX	8	2.0×5.0	4.6	56	10	0.035
13,5×3	XXX	8	3.0×5.0	4.6	56	10	0.035
13,5×4	XXX	8	4.0×5.0	4.6	56	10	0.035
16,5×3	XXX	10	3.0×6.5	4.6	56	10	0.035
16,5×4	XXX	10	4.0×6.5	4.6	56	10	0.035
19,5×3	XXX	10	3.0×7.5	5.6	63	10	0.038
19,5×4	XXX	10	4.0×7.5	5.6	63	10	0.038
22,5×4	XXX	10	4.0×9.0	6	63	10	0.038
25,5×5	XXX	10	5,0×10,0	7.5	63	10	0.038
28,5×5	XXX	10	5,0×11,0	8.5	63	10	0.04
32,5×5	XXX	10	5,0×13,0	8.5	71	12	0.04
38,5×10	XXX	10	10,0×15,0	11.8	71	12	0.04
45,5×10	XXX	10	10,0×16,0	11.8	71	12	0.04

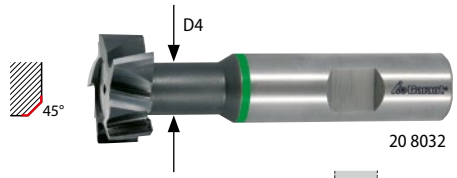
Solid carbide | DIN 851 | Type N | d11 | 6 | 12° | h6 DIN 6535 HB

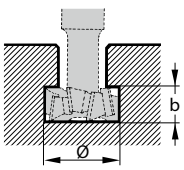
Garant® Solid carbide T-slot cutter

The mill cuts on all three sides.

Due to alternate set teeth (staggered), high cutting performance is achieved.

Note: For milling T-slots to DIN 650.
Feed at 50% f_z until full engagement.





Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	Graphite GRP CRP	Uni
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	N	
20 8032				105	90	90	80	60										●

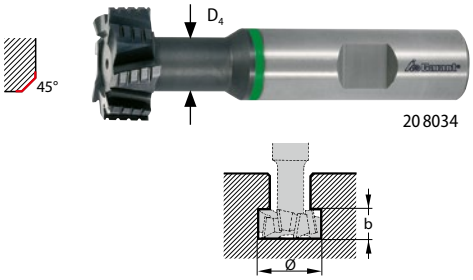
Ø×width d11×d11 D_C×b	11X 20 8032 Solid carbide T-slot cutter	for T-slots DIN 650	Ø D_4	L_{tot}		45°	< 900 N f_z
mm	TiAlN	mm	mm	mm	mm	mm	mm
12,5×6	XXX	6	5	57	10	0.2	0.033
16×8	XXX	8	7	62	10	0.2	0.034
18×8	XXX	10	8	70	12	0.2	0.034
21×9	XXX	12	10	74	12	0.2	0.034
25×11	XXX	14	12	82	16	0.2	0.034
28×12	XXX	16	13	85	16	0.2	0.035
32×14	XXX	18	15	90	16	0.2	0.045

Solid carbide | DIN 851 | Type NF | d11 | 6 | 12° | h6 DIN 6535 HB

Garant Solid carbide T-slot cutter with semi-roughing profile

Peripheral cutting, alternate set teeth (staggered). The sides of the teeth are ground to give clearance and thus cannot jam in the component. With semi-roughing profile.

Note: For milling T-slots to DIN 650.
Feed at 50% f_z until full engagement.



Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	Graphite GRP CRP	Uni
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	N	
20 8034				105	90	90	80	60										●

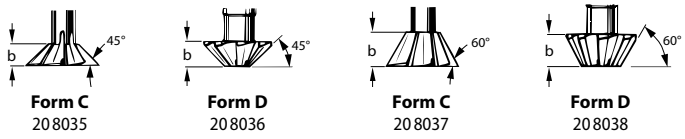
Ø×width d11×d11 D_c×b	11X 20 8034 Solid carbide T-slot cutter, semi-roughing	for T-slots DIN 650	Ø D_4	L_{tot}		45°	< 900 N f_z
mm	TiAlN	mm	mm	mm	mm	mm	mm
12,5×6	XXX	6	5	57	10	0.2	0.033
16×8	XXX	8	7	62	10	0.2	0.034
18×8	XXX	10	8	70	12	0.2	0.034
21×9	XXX	12	10	74	12	0.2	0.034
25×11	XXX	14	12	82	16	0.2	0.034
28×12	XXX	16	13	85	16	0.2	0.035
32×14	XXX	18	15	90	16	0.2	0.035

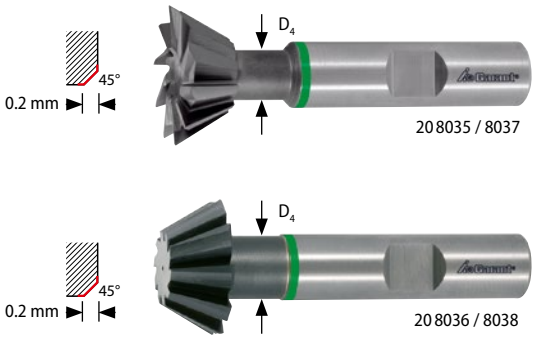
Solid carbide | DIN 1833 | js16 | h6 DIN 6535 HB | 6 | 8 | 9 | 10

Garant Solid carbide dovetail milling cutter

Angular tolerance ±8′.

Note: For milling dovetails in tool making and machine building.
Feed at 50% f_z until full engagement.





Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	Graphite GRP CRP	Uni
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	N	
20 8035–20 8038				105	90	90	80	60										●

Ø js16 D_c	11X 20 8035 Solid carbide dove-tail milling cutter Form C 45°	11X 20 8036 Solid carbide dove-tail milling cutter Form D 45°	11X 20 8037 Solid carbide dove-tail milling cutter Form C 60°	11X 20 8038 Solid carbide dove-tail milling cutter Form D 60°	Dimension b		Ø D_4				L_{tot}	No. of teeth Z			< 900 N f_z
					20 8035 20 8036	20 8037 20 8038	20 8035	20 8036	20 8037	20 8038		20 8035 20 8037	20 8036 20 8038		
mm	TiAlN	TiAlN	TiAlN	TiAlN	mm	mm	mm	mm	mm	mm	mm			mm	mm
12	(XXX)	(XXX)	(XXX)	(XXX)	3	5	5	5	5	5	55	6	6	10	0.04
16	XXX	XXX	XXX	XXX	4	6.3	6.7	8	6	8.2	60	6	6	10	0.042
20	XXX	XXX	XXX	XXX	5	8	7	10	7.8	10.5	63	8	8	12	0.042
22	XXX	XXX	XXX	XXX	6	9	8	10.2	10	10.2	67	8	8	12	0.043
25	XXX	XXX	XXX	XXX	6.3	10	8	11	9	11.5	67	8	8	12	0.045
28	XXX	XXX	XXX	XXX	7.5	11	8.5	14	13	14	80	9	10	16	0.045
32	XXX	XXX	XXX	XXX	8	12.5	13	15	15	15	71	9	10	16	0.045
38	XXX	XXX	XXX	XXX	10	16	15	15	15	15	80	9	10	16	0.045

Solid carbide | Standard | Type N | h6 | 1 | 60° | h6 DIN 6535 HA

Garant® Solid carbide engraving cutter

Application: For engraving contours.

Note: f_z for $a_e = 1.0 \times D$

20 8040

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	K						
20 8040	180	140	105	70	60	55	35							40			55	●		○	○	●	●

Ø h6 D_C	11X 20 8040	L_s	L_{tot}		< 900 N f_z
	Solid carbide engraving cutter				
mm	60°	mm	mm	mm	mm
3	XXX	15	50	3	0.01
4	XXX	18	50	4	0.02
6	XXX	20	54	6	0.03

Solid carbide | Standard | Type N | e8 | 2 | 30° | a_e 0.5×D | h6 DIN 6535 HA

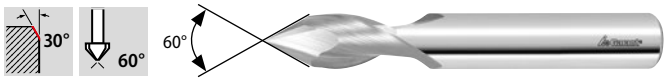
Garant® Universal solid carbide chamfer mill

Tolerance: Point angle ±1°.

Application:

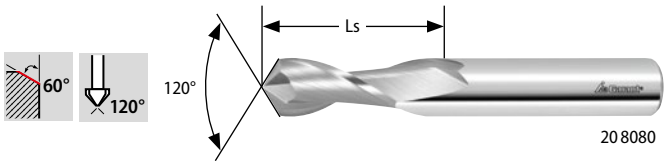
20 8065 –
- Countersinking
- Chamfering

20 8070/8080 –
- Slot milling
- Countersinking
- Milling
- Can also be used as a NC spotting drill.



20 8065

20 8070



20 8080

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	K						
20 8065–20 8080	180	140	105	70	60	55	35							40			55	●		●	○		○

Ø e8 D_C	11X 20 8065	11X 20 8070	11X 20 8080	L_s	L_{tot}		< 900 N f_z
	Solid carbide chamfer mill						
mm	60°	90°	120°	mm	mm	mm	mm
3	XXX	XXX	XXX	8	57	6	0.01
4	XXX	XXX	XXX	11	57	6	0.02
5	XXX	XXX	XXX	13	57	6	0.02
6	XXX	XXX	XXX	13	57	6	0.03
8	XXX	XXX	XXX	19	63	8	0.04
10	XXX	XXX	XXX	22	72	10	0.05
12	XXX	XXX	XXX	26	83	12	0.06
16	XXX	XXX	XXX	32	92	16	0.08
20	XXX	XXX	XXX	38	104	20	0.1

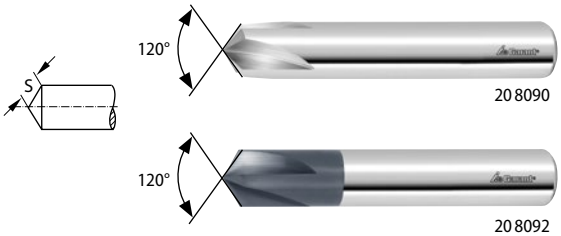
Solid carbide | Standard | Type N | h6 | 120° | h6 DIN 6535 HA | 60°

3 | 4

Garant Solid carbide deburrer

Tolerance: **Dimension S = ± 0.1 mm.**
With special flute geometry for smooth cutting.

Application: Perfectly suitable for **chamfering** and **deburring** component edges and for **contouring applications**.



Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	K						
20 8090	180	140	105	70	60	55	35							40	30		55	●		●	○		○
20 8092		280	200	120	105	100	70	60	35					80	60		90	●		●	○	○	○

Ø h6 D_c	11X 20 8090	11X 20 8092	No. of teeth Z	Dimension S	L_{tot}		< 900 N f_z
	Solid carbide deburrer 120°						
		TiAlN					
mm				mm	mm	mm	mm
1	XXX	XXX	3	0.5	50	3	0.005
2	XXX	XXX	3	1.1	50	3	0.01
3	XXX	XXX	3	1.6	50	3	0.01
4	XXX	XXX	4	2.2	54	4	0.02
6	XXX	XXX	4	3.4	57	6	0.03
8	XXX	XXX	4	4.4	63	8	0.04
10	XXX	XXX	4	5.5	72	10	0.05
12	XXX	XXX	4	6.6	83	12	0.06
16	XXX	XXX	4	8.9	93	16	0.08

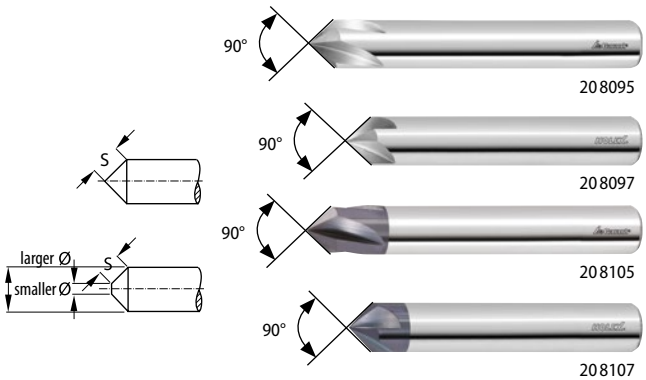
Solid carbide | Standard | Type N | h6 | 90° | h6 DIN 6535 HA | 45°

3 | 4

Solid carbide deburrer

Tolerance: **Dimension S = ± 0.1 mm.**
20 8095/8105 – With special flute geometry for smooth cutting.

Application: Perfectly suitable for **chamfering** and **deburring** component edges and for **contouring applications**.



Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	K						
20 8095/8097	180	140	105	70	60	55	35							40	30		55	●		●	○		○
20 8105/8107		280	200	120	105	100	70	60	35					80	60		90	●		●	○	○	○

Ø h6 D_c	11X 20 8095 Garant	12X 20 8097 HOLEX	11X 20 8105 Garant	12X 20 8107 HOLEX	small Ø	large Ø	No. of teeth Z	Dimension S	L_{tot}			< 900 N f_z
	Solid carbide deburrer 90°								20 8095 20 8105	20 8097 20 8107		
mm	uncoated	uncoated	TiAlN	TiAlN	mm	mm		mm	mm	mm	mm	mm
1	XXX	XXX	XXX	XXX	–	–	3	0.7	50	38	3	0.005
2	XXX	XXX	XXX	XXX	–	–	3	1.4	50	38	3	0.01
3	XXX	XXX	XXX	XXX	–	–	3	2.1	50	38	3	0.01
4	XXX	XXX	XXX	XXX	–	–	4	2.8	54	50	4	0.02
6	XXX	XXX	XXX	XXX	–	–	4	4.2	57	54	6	0.03
6M	XXX	–	XXX	–	3	6	4	2.1	100	–	6	0.025
8	XXX	XXX	XXX	XXX	–	–	4	5.6	63	59	8	0.04
10	XXX	XXX	XXX	XXX	–	–	4	7	72	67	10	0.05
10M	XXX	–	XXX	–	5	10	4	3.5	100	–	10	0.045
12	XXX	XXX	XXX	XXX	–	–	4	8.5	83	74	12	0.06
12M	XXX	–	XXX	–	6	12	4	4.2	120	–	12	0.05
16	XXX	XXX	XXX	XXX	–	–	4	11.2	93	80	16	0.08

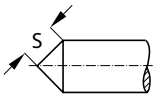
Solid carbide | Standard | Type N | h6 | 4 | 90° | h6 DIN 6535 HB | 45°

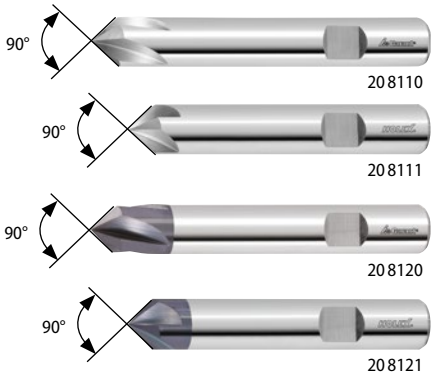
Solid carbide deburrer

Tolerance: **Dimension S = ± 0.1 mm.**

20 8110/8120 – With special flute geometry for smooth cutting.

Application: Perfectly suitable for **chamfering** and **deburring** component edges and for **contouring applications**.





Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	K						
20 8110/8111	180	140	105	70	60	55	35							40	30		55	●		●	○		○
20 8120/8121		280	200	120	105	100	70	60	35					80	60		90	●		●	○	○	○

Ø h6 D_c	11X 20 8110 Garant	12X 20 8111 HOLEX	11X 20 8120 Garant	12X 20 8121 HOLEX	Dimension S	L_{tot} 20 8110 20 8120	L_{tot} 20 8111 20 8121		< 900 N f_z
	Solid carbide deburrer 90°								
mm			TiAlN	TiAlN	mm	mm	mm	mm	mm
6	XXX	XXX	XXX	XXX	4.2	57	54	6	0.03
8	XXX	XXX	XXX	XXX	5.6	63	59	8	0.04
10	XXX	XXX	XXX	XXX	7	72	67	10	0.05
12	XXX	XXX	XXX	XXX	8.5	83	74	12	0.06
16	XXX	–	XXX	–	11.2	93	–	16	0.08

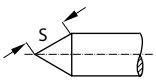
Solid carbide | Standard | Type N | h6 | 60° | h6 DIN 6535 HA | 30°

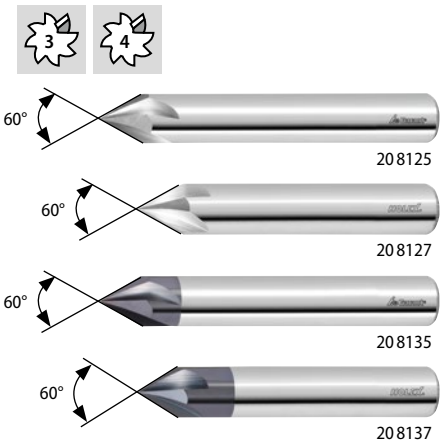
Solid carbide deburrer

Tolerance: **Dimension S = ± 0.1 mm.**

20 8125/8135 – With special flute geometry for smooth cutting.

Application: Perfectly suitable for **chamfering** and **deburring** component edges and for **contouring applications**.





Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	K						
20 8125/8127	180	140	105	70	60	55	35							40	30		55	●		●	○		○
20 8135/8137		280	200	120	105	100	70	60	35					80	60		90	●		●	○	○	○

Ø h6 D_c	11X 20 8125 Garant	12X 20 8127 HOLEX	11X 20 8135 Garant	12X 20 8137 HOLEX	No. of teeth Z	Dimension S	L_{tot} 20 8125 20 8135	L_{tot} 20 8127 20 8137		< 900 N f_z
	Solid carbide deburrer 60°									
mm			TiAlN	TiAlN		mm	mm	mm	mm	mm
1	XXX	XXX	XXX	XXX	3	0.9	50	38	3	0.005
2	XXX	XXX	XXX	XXX	3	1.9	50	38	3	0.01
3	XXX	XXX	XXX	XXX	3	2.9	50	38	3	0.01
4	XXX	XXX	XXX	XXX	4	3.9	54	50	4	0.02
6	XXX	XXX	XXX	XXX	4	5.9	57	54	6	0.03
8	XXX	XXX	XXX	XXX	4	7.9	63	59	8	0.04
10	XXX	XXX	XXX	XXX	4	9.9	72	67	10	0.05
12	XXX	XXX	XXX	XXX	4	11.9	83	74	12	0.06
16	XXX	XXX	XXX	XXX	4	15.8	93	80	16	0.08

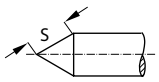
Solid carbide | Standard | Type N | h6 | 4 | 60° | h6 DIN 6535 HB | 30°

Solid carbide deburrer

Tolerance: **Dimension S = ± 0.1 mm.**

20 8140/8160 – With special flute geometry for smooth cutting.

Application: Perfectly suitable for **chamfering** and **deburring** component edges and for **contouring applications**.



20 8140

20 8141

20 8160

20 8161

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	K						
20 8140/8141	180	140	105	70	60	55	35							40	30		55	●		●	○		○
20 8160/8161		280	200	120	105	100	70	60	35					80	60		90	●		●	○	○	○

Ø h6 D_c	11X 20 8140 Garant	12X 20 8141 HOLEX	11X 20 8160 Garant	12X 20 8161 HOLEX	Dimension S	L_{tot}		< 900 N f_z
	Solid carbide deburrer 60°					20 8140 20 8160	20 8141 20 8161	
mm			TiAlN	TiAlN	mm	mm	mm	mm
6	XXX	XXX	XXX	XXX	5.9	57	54	0.03
8	XXX	XXX	XXX	XXX	7.9	63	59	0.04
10	XXX	XXX	XXX	XXX	9.9	72	67	0.05
12	XXX	XXX	XXX	XXX	11.9	83	74	0.06
16	XXX	–	XXX	–	15.8	93	–	0.08

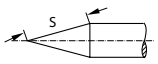
Solid carbide | Standard | Type N | h6 | 30° | h6 DIN 6535 HA | 15° | 3 | 4

Garant **Solid carbide deburrer**

Tolerance: **Dimension S = ± 0.1 mm.**

With special flute geometry for smooth cutting.

Application: Perfectly suitable for **chamfering** and **deburring** component edges and for **contouring applications**.



20 8150

20 8152

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	K						
20 8150	180	140	105	70	60	55	35							40	30		55	●		●	○		○
20 8152		280	200	120	105	100	70	60	35					80	60		90	●		●	○	○	○

Ø h6 D_c	11X 20 8150	11X 20 8152	No. of teeth Z	Dimension S	L_{tot}		< 900 N f_z
	Solid carbide deburrer 30°						
mm		TiAlN		mm	mm	mm	mm
1	XXX	XXX	3	1.8	50	3	0.005
2	XXX	XXX	3	3.7	50	3	0.01
3	XXX	XXX	3	5.6	50	3	0.01
4	XXX	XXX	4	7.5	54	4	0.02
6	XXX	XXX	4	11.2	57	6	0.03
8	XXX	XXX	4	14.9	63	8	0.04
10	XXX	XXX	4	18.6	72	10	0.05
12	XXX	XXX	4	22.4	83	12	0.06
16	XXX	XXX	4	30	93	16	0.08

Solid carbide | Standard | h6 | 90° | 45°

Garant® Solid carbide deburrer

With special flute geometry, smooth cutting.
Tolerance: **Dimension S = ± 0.2 mm.**

20 8156/8158 – **Outstanding surface qualities** thanks to the 35° helix angle.

Application: Perfectly suitable for **chamfering** and **deburring** component edges and for **contouring applications**.

Type N | 35° | h6 DIN 6535 HA | 4 | 90° | new

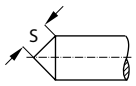
20 8156

Type H | 35° | h6 DIN 6535 HA | 6 | 90° | new

20 8158

Type N | h6 DIN 6535 HB | 6 | 8 | 90°

20 8162



Type N | h6 DIN 6535 HB | 6 | 8 | 90°

20 8164

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	K						
20 8156		300	220	130	115	110	80	65	35					90	70		100	●		●	○	○	○
20 8158								120	100	90	60										○	●	●
20 8162	180	140	105	70	60	55	35							40	30		55	●		●	○		○
20 8164		280	200	120	105	100	70	60	35					80	60		90	●		●	○	○	○

Ø h6 D_C	11X 20 8156	11X 20 8158	11X 20 8162	11X 20 8164	No. of teeth Z			Dimension S	L_{tot}		< 900 N f_z	< 60 HRC f_z
	Solid carbide deburrer	Diabolo solid carbide deburrer	Solid carbide deburrer									
	90°				20 8156	20 8158	20 8162 20 8164				20 8156 20 8162 20 8164	20 8158
mm	TiAlN	TiAlN		TiAlN				mm	mm	mm	mm	mm
6	XXX	XXX	XXX	XXX	4	6	6	4.2	57	6	0.03	0.02
8	XXX	XXX	XXX	XXX	4	6	6	5.6	63	8	0.04	0.03
10	XXX	XXX	XXX	XXX	4	6	6	7	72	10	0.05	0.035
12	XXX	XXX	XXX	XXX	4	6	6	8.5	83	12	0.06	0.045
16	XXX	XXX	XXX	XXX	4	6	8	11.2	92	16	0.08	0.06
20	–	–	–	XXX	–	–	8	14	104	20	0.1	–

Solid carbide | Standard | Type N | h6 | 60° | h6 DIN 6535 HB | 30°

Garant® Solid carbide deburrer

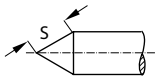
With special flute geometry, smooth cutting.
Tolerance: **Dimension S = ± 0.2 mm.**

Application: Perfectly suitable for **chamfering** and **deburring** component edges and for **contouring applications**.

6 | 8

60°

20 8166



60°

20 8168

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	K						
20 8166	180	140	105	70	60	55	35							40	30		55	●		●	○		○
20 8168		280	200	120	105	100	70	60	35					80	60		90	●		●	○	○	○

Ø h6 D_C	11X 20 8166	11X 20 8168	No. of teeth Z	Dimension S	L_{tot}		< 900 N f_z
	Solid carbide deburrer						
	60°						
mm		TiAlN		mm	mm	mm	mm
6	XXX	XXX	6	5.9	57	6	0.03
8	XXX	XXX	6	7.9	63	8	0.04
10	XXX	XXX	6	9.9	72	10	0.05
12	XXX	XXX	6	11.9	83	12	0.06
16	XXX	XXX	8	15.8	92	16	0.08
20	–	XXX	8	19.9	104	20	0.1

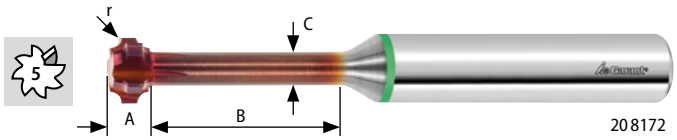
Solid carbide | Standard | Type N | ±0.05 | a_e 0.5×r | h6 DIN 6535 HA | R R

Garant

Solid carbide front / back corner rounding cutter

20 8170

Extra long shank.
Double ground head **with quadrant profile.**
Tolerance: Size = **Radius r ±0.05 mm.**
Application: For **front** and **back deburring** of edges with contours.



20 8172

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	K						
20 8170		115	70	65	65	40	35							35			40	○		●	○	●	●
20 8172		125	75	70	70	45	40							**35**	30		45	●		●	○	●	●

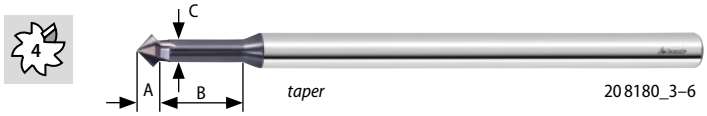
Radius r	11X 20 8170	11X 20 8172	small ∅	large ∅	A +0.5	B +0.5	C +0.05	L_{tot}			L_s	< 900 N f_z
	Solid carbide front / back corner rounding cutter					20 8172	20 8172		20 8170	20 8172		
mm	TiAlN	TiAlN	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
0,2	XXX	XXX	7.6	8	2	26	6	100	6	8	0.2	0.01
0,3	XXX	XXX	7.4	8	2	26	6	100	6	8	0.3	0.01
0,4	XXX	XXX	7.2	8	2	26	6	100	6	8	0.4	0.01
0,5	XXX	XXX	7	8	2	26	6	100	6	8	0.5	0.01
0,8	XXX	XXX	8.4	10	4	31	6	100	6	10	0.8	0.01
1	XXX	XXX	8	10	4	31	6	100	6	10	1	0.01
1,2	XXX	XXX	7.6	10	5	31	6	100	6	10	1.2	0.01
1,5	XXX	XXX	7	10	5	31	6	100	6	10	1.5	0.01
1,8	XXX	XXX	8.4	12	6	37	6	100	6	12	1.8	0.01
2	XXX	XXX	8	12	7	37	6	100	6	12	2	0.01
2,5	XXX	XXX	7	12	8	37	6	100	6	12	2.5	0.01

Solid carbide | Standard | Type N | ±0.05 | 90° | a_e 0.25×A | h6 DIN 6535 HA | 45° 45°

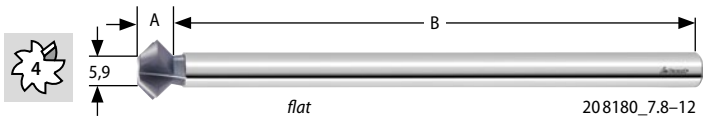
Garant

Solid carbide front / back deburring cutter

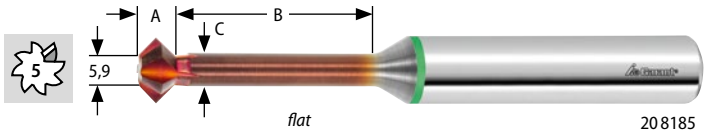
Extra long shank.
Double ground head **with 45° angle.**
Application: For **front** and **back deburring** and **chamfering** even where access is difficult.
Particularly suitable for **contouring applications.**



taper 20 8180_3–6



flat 20 8180_7.8–12



flat 20 8185

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	K						
20 8180		115	70	65	65	40	35							35			40	○		●	○	●	●
20 8185		125	75	70	70	45	40							**35**	30		45	●		●	○	●	●

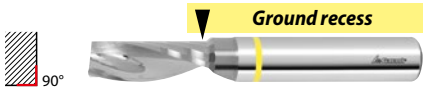
∅ D_c	11X 20 8180	11X 20 8185	A +0.5	B +0.5		C +0.05		L_{tot}	Shape			< 900 N f_z
	Solid carbide front / back deburring cutter			20 8180	20 8185	20 8180	20 8185			20 8180	20 8185	
mm	TiAlN	TiAlN	mm	mm	mm	mm	mm	mm		mm	mm	mm
3	XXX	–	2	10	–	2,2	–	75	pointed	4	–	0.01
3,8	XXX	–	2.7	13	–	2.9	–	75	pointed	4	–	0.01
4	XXX	–	2.7	13	–	2.9	–	75	pointed	4	–	0.01
4,8	XXX	–	3	15	–	3.9	–	75	pointed	5	–	0.01
5	XXX	–	3	15	–	3.9	–	75	pointed	5	–	0.01
5,8	XXX	–	4	15	–	3.9	–	100	pointed	6	–	0.01
6	XXX	–	4	15	–	3.9	–	100	pointed	6	–	0.01
7,8	XXX	XXX	2	98	26		6	100	flat	6	8	0.012
8	XXX	XXX	2	98	26		6	100	flat	6	8	0.012
9,8	XXX	XXX	4	96	31		6	100	flat	6	10	0.014
10	XXX	XXX	4	96	31		6	100	flat	6	10	0.014
11,8	XXX	XXX	6	94	37		6	100	flat	6	12	0.017
12	XXX	XXX	6	94	37		6	100	flat	6	12	0.017

Solid carbide | Standard | Type W | h10 | 1 | 23° | h5 DIN 6535 HA

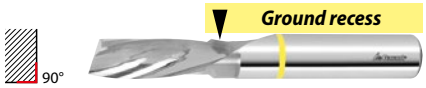
Garant® Solid carbide milling cutter

Large flutes for unobstructed swarf evacuation.
Special geometry **for machining plastic.**
20 9305 – Left-hand flutes, right-hand cutting.
Application: Especially for milling **plastics, plunging** and **contour milling.**

Note:
20 9300 – **Successor product to No. 209310.**
20 9305 – **Successor product to No. 209315.**



20 9300



20 9305

Suitable for/ v_c [m/min]	Alu	Alu	Alu cast > 10 % Si	PMMA acrylic	PE-HD	PA 66	PEEK	PF 31	AFRP aramid	PVDF GF20	POM GF25	PA 66 GF30	PEEK GF30	PTFE CF25	PEEK CF30	Honey-comb sandwich	Cu	CuZn					
ISO code	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N					
20 9300/9305	180	140	105	**190**	**140**	**160**	**140**	**120**								180	**150**	180		●		○	●

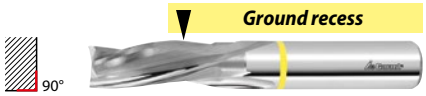
∅ h10 D_C	11X 20 9300	11X 20 9305	L_s	L_4	∅ D_4	L_{tot}		PMMA acrylic f_z
	Solid carbide slot drill							
mm		Left-hand flutes	mm	mm	mm	mm	mm	mm
1,5	XXX	XXX	6	10	1.3	50	3	0.004
2	XXX	XXX	8	12	1.8	50	3	0.008
3	XXX	XXX	12	17	2.8	50	3	0.008
4	XXX	XXX	15	20	3.8	60	4	0.015
5	XXX	XXX	17	22	4.8	60	5	0.015
6	XXX	XXX	20	25	5.8	65	6	0.025
8	XXX	XXX	22	27	7.8	70	8	0.03
10	XXX	XXX	25	32	9.8	75	10	0.04
12	XXX	XXX	30	38	11.8	83	12	0.05

Solid carbide | Standard | Type W | e8 | 20° | a_e 0.5×D | h6 DIN 6535 HA | 2 | 3

Garant® Solid carbide milling cutter

Special geometry for machining aluminium and plastics.
20 9322 – Left-hand flutes, right-hand cutting.
Application: Extremely sharp cutting edges, **especially for machining plastics.**

20 9320



20 9322

Suitable for/ v_c [m/min]	Alu	Alu	Alu cast > 10 % Si	PMMA acrylic	PE-HD	PA 66	PEEK	PF 31	AFRP aramid	PVDF GF20	POM GF25	PA 66 GF30	PEEK GF30	PTFE CF25	PEEK CF30	Honey-comb sandwich	Cu	CuZn					
ISO code	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N					
20 9320/9322	180	140	105	**190**	**140**	**160**	**140**	**120**								180	**150**	180		●		○	●

∅ e8 D_C	11X 20 9320	11X 20 9322	No. of teeth Z	L_s	L_4	∅ D_4	L_{tot}		PMMA acrylic f_z	PMMA acrylic f_z
	Solid carbide slot drill									
mm		Left-hand flutes		mm	mm	mm	mm	mm	mm	mm
4	XXX	XXX	2	13	16	3.8	54	4	0.015	0.02
5	XXX	XXX	2	15	18	4.8	54	5	0.015	0.02
6	XXX	XXX	2	16	21	5.8	64	6	0.025	0.03
8	XXX	XXX	2	22	27	7.8	70	8	0.03	0.04
10	XXX	XXX	2	25	32	9.8	72	10	0.04	0.05
12	XXX	XXX	3	28	38	11.8	83	12	0.05	0.07
14	XXX	–	3	30	42	13.8	83	14	0.05	0.07
16	XXX	XXX	3	36	44	15.8	92	16	0.065	0.09
20	XXX	XXX	3	41	54	19.8	104	20	0.085	0.12

Solid carbide | Standard | Type W | h10 | a_e 0.5×D | h6 DIN 6535 HA

Garant® Solid carbide router cutter

High performance diamond-pattern teeth for efficient machining of fibre-reinforced composites. For slot cutting in the roughing range.

Size 5M, 6M, 8M: Extra long version.

20 9410/9415 – Right-hand helix, **dragging cut** for standard applications.

20 9420/9425 – **Compacting cut,** the material is pushed down on to the substrate. Highly suitable for thin materials.

20 9410

20 9415

20 9420

20 9425

Suitable for/ v_c [m/min]	PMMA acrylic	PE-HD	PA 66	PEEK	PF 31	AFRP aramid	PVDF GF20	POM GF25	PA 66 GF30	PEEK GF30	PTFE CF25	PEEK CF30	Hybrid	Honey-comb sandwich	MMC	GRP	CRP	Graphite GRP CRP					
ISO code	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N					
20 9410–20 9425							120	120	100	100	120	110				120	120			●		●	●

Ø h10 D_c	11X 20 9410	11X 20 9415	11X 20 9420	11X 20 9425	L_s	L_{tot}		POM GF25 f	PEEK CF30 f
	Solid carbide router cutter dragging cut		Solid carbide router cutter compacting cut						
mm	coarse	medium	coarse	medium	mm	mm	mm	mm/rev.	mm/rev.
4	XXX	XXX	XXX	XXX	16	50	4	0.1	0.07
5	XXX	XXX	XXX	XXX	16	50	5	0.12	0.09
5M	XXX	XXX	–	–	16	75	5	0.12	0.09
6	XXX	XXX	XXX	XXX	19	60	6	0.18	0.12
6M	XXX	XXX	–	–	30	75	6	0.18	0.12
8	XXX	XXX	–	–	25	63	8	0.22	0.16
8M	XXX	XXX	–	–	35	75	8	0.22	0.16
10	XXX	XXX	XXX	XXX	25	72	10	0.3	0.2
12	XXX	XXX	–	–	32	83	12	0.38	0.24
16	XXX	XXX	–	–	36	92	16	0.44	0.27
20	XXX	XXX	–	–	45	104	20	0.5	0.3

Solid carbide | Standard | Type W | h10 | 135° | a_e 0.5×D | h6 DIN 6535 HA

Garant® Solid carbide router cutter with drill point

High performance diamond-pattern cut and **135° drill tip** for efficient machining of fibre-reinforced composites. For slot cutting in the roughing range.

20 9435 – Right-hand helix, **dragging cut** for standard applications. Size 5M, 6M, 8M: Extra long version.

20 9445 – **Compacting cut,** the material is pushed down on to the substrate. Highly suitable for thin materials.

20 9435

20 9445

Suitable for/ v_c [m/min]	PMMA acrylic	PE-HD	PA 66	PEEK	PF 31	AFRP aramid	PVDF GF20	POM GF25	PA 66 GF30	PEEK GF30	PTFE CF25	PEEK CF30	Hybrid	Honey-comb sandwich	MMC	GRP	CRP	Graphite GRP CRP					
ISO code	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N					
20 9435/9445							120	120	100	100	120	110				120	120			●		●	●

Ø h10 D_c	11X 20 9435	11X 20 9445	L_s	L_{tot}		POM GF25 f	PEEK CF30 f
	Solid carbide router cutter with drill point, dragging cut	Solid carbide router cutter with drill point, compacting cut					
mm	medium		mm	mm	mm	mm/rev.	mm/rev.
4	XXX	XXX	16	50	4	0.1	0.07
5	XXX	XXX	16	50	5	0.12	0.09
5M	XXX	–	16	75	5	0.12	0.09
6	XXX	XXX	19	60	6	0.18	0.12
6M	XXX	–	30	75	6	0.18	0.12
8	XXX	–	25	60	8	0.22	0.16
8M	XXX	–	35	75	8	0.22	0.16
10	XXX	XXX	25	72	10	0.3	0.2
12	XXX	–	32	83	12	0.38	0.24
16	XXX	–	36	92	16	0.44	0.27
20	XXX	–	45	104	20	0.5	0.3

Solid carbide | Standard | Type W | h10 | a_e 0.5×D | h6 DIN 6535 HA

Solid carbide ball nose router cutter

High performance diamond-pattern teeth for efficient machining of fibre-reinforced composites. For slot cutting in the roughing range. The cutters have a **precise radius contour in the radius area.** This enables outstanding results when copy milling.

20 9460

Suitable for/ v_c [m/min]	PMMA acrylic	PE-HD	PA 66	PEEK	PF 31	AFRP aramid	PVDF GF20	POM GF25	PA 66 GF30	PEEK GF30	PTFE CF25	PEEK CF30	Hybrid	Honey-comb sandwich	MMC	GRP	CRP	Graphite GRP CRP					
ISO code	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N					
20 9460							120	120	100	100	120	110				120	120			●		●	●

Ø h10 D_c	11X	20 9460	L_s	L_{tot}		POM GF25	PEEK CF30
		Solid carbide router cutter dragging cut				f	f
mm		**medium**	mm	mm	mm	mm/rev.	mm/rev.
4		XXX	19	50	4	0.1	0.07
5		XXX	19	50	5	0.12	0.09
6		XXX	22	60	6	0.18	0.12
8		XXX	29	63	8	0.22	0.16
10		XXX	30	72	10	0.3	0.2
12		XXX	38	83	12	0.38	0.24
16		XXX	44	92	16	0.44	0.27
20		XXX	55	104	20	0.5	0.3

Solid carbide | Standard | h10 | a_e 0.5×D | h6 DIN 6535 HA | G 2.5 n_{max}

Solid carbide router cutter for GRP and CRP

High performance diamond-pattern cut for efficient roughing of fibre-reinforced composites.

20 9512

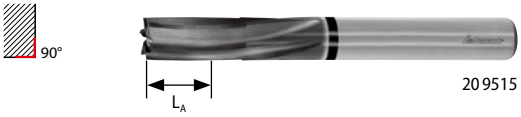
Suitable for/ v_c [m/min]	PMMA acrylic	PE-HD	PA 66	PEEK	PF 31	AFRP aramid	PVDF GF20	POM GF25	PA 66 GF30	PEEK GF30	PTFE CF25	PEEK CF30	Hybrid	Honey-comb sandwich	MMC	GRP	CRP	Graphite GRP CRP					
ISO code	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N					
20 9512							200	190	170	150	180	160	●			190	190			●		●	●

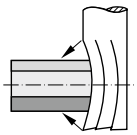
Ø h10 D_c	11Y	20 9512	L_s	L_{tot}		GRP CRP
		Solid carbide router cutter compacting cut				f
		fine				
mm		**Diamond**	mm	mm	mm	mm/rev.
4		XXX	16	50	4	0.21
5		XXX	16	50	5	0.21
6		XXX	19	60	6	0.28
8		XXX	25	63	8	0.35
10		XXX	25	72	10	0.42
12		XXX	32	83	12	0.42
16		XXX	36	92	16	0.49
20		XXX	45	104	20	0.56

Solid carbide | Standard | h10 | a_e 0.5×D | h6 DIN 6535 HA | 4 | 6

Garant® Solid carbide milling cutter for GRP, CRP, and graphite

Twisted and curved cutting edges, which enable **burr-free milling** of both the upper and lower edges of fibre-reinforced composites.
Delamination is prevented because the cutter performs a cut which is simultaneously dragging and compacting. The cutter must be positioned centrally to the cross section of the material.





The helical curved cutting profile prevents delamination and permits burr-free milling.

Suitable for/ v_c [m/min]	PMMA acrylic	PE-HD	PA 66	PEEK	PF 31	AFRP aramid	PVDF GF20	POM GF25	PA 66 GF30	PEEK GF30	PTFE CF25	PEEK CF30	Hybrid	Honey-comb sandwich	MMC	GRP	GRP CRP	Graphite
ISO code	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
20 9515/9517							200	190	170	150	180	160	●	350		190	190	340
																	●	● ●

Ø h10 D_c	11Y 20 9515	11Y 20 9517	No. of teeth Z	L_s		Cutting section dragging L_A		L_{tot}			GRP CRP f_z
	Solid carbide milling cutter			20 9515	20 9517	20 9515	20 9517	20 9515	20 9517		
mm	Diamond	Diamond		mm	mm	mm	mm	mm	mm	mm	mm
6	XXX	XXX	4	16	21	8	10	58	65	6	0.06
8	XXX	XXX	6	22	28	11	14	70	85	8	0.07
10	XXX	XXX	6	25	32	12	16	73	85	10	0.08
12	XXX	XXX	6	28	36	14	18	84	93	12	0.1

Solid carbide | Standard | h10 | 8 | h6 DIN 6535 HA

Garant® Solid carbide milling cutter for GRP, CRP, and graphite

High performance geometry with multiple teeth for extremely high material removal rates in a single pass.

- 20 9525 – **Straight flutes** for a neutral cut.
- 20 9527 – Right-hand helix, **dragging cut** for standard applications.
- 20 9535 – Left-hand helix, **compacting cut.** The material is pushed down on to the substrate. Highly suitable for thin materials.

Suitable for/ v_c [m/min]	PMMA acrylic	PE-HD	PA 66	PEEK	PF 31	AFRP aramid	PVDF GF20	POM GF25	PA 66 GF30	PEEK GF30	PTFE CF25	PEEK CF30	Hybrid	Honey-comb sandwich	MMC	GRP	GRP CRP	Graphite
ISO code	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
20 9525–20 9535							200	190	170	150	180	160	●	350		190	190	340
																	●	● ●

Ø h10 D_c	11Y 20 9525	11Y 20 9527	11Y 20 9535	L_s	L_{tot}		45°	GRP CRP f_z	Graphite f_z
	Solid carbide milling cutter								
	straight cut	dragging cut	compacting cut						
mm	Diamond	Diamond	Diamond	mm	mm	mm	mm	mm	mm
4	XXX	XXX	XXX	16	60	6	0.08	0.03	0.03
5	XXX	XXX	XXX	18	60	6	0.1	0.03	0.03
6	XXX	XXX	XXX	28	75	6	0.12	0.04	0.04
8	XXX	XXX	XXX	32	75	8	0.16	0.05	0.05
10	XXX	XXX	XXX	32	72	10	0.2	0.06	0.06
12	XXX	XXX	XXX	32	83	12	0.2	0.06	0.06
16	XXX	XXX	XXX	36	92	16	0.2	0.07	0.07
20	XXX	XXX	XXX	45	104	20	0.2	0.08	0.08

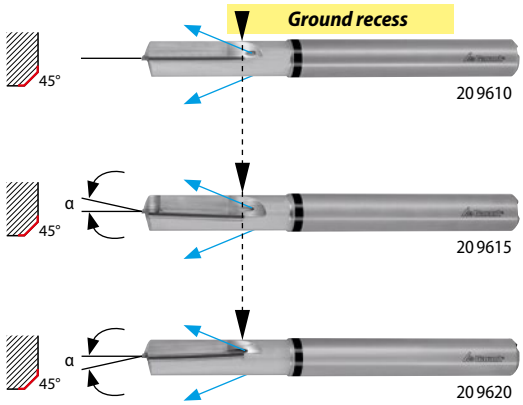
PCD | Standard | h10 | 2 | h6 DIN 6535 HA

Garant

PCD milling cutter with internal cooling for GRP, CRP, and graphite

High performance PCD slot drill for the **highest demands in respect to material removal rates** when machining **GRP, CRP** and **graphite.**

- 20 9610 – **Straight flutes** for a neutral cut.
- 20 9615 – Right-hand helix, **dragging cut** for standard applications.
- 20 9620 – Left-hand helix, **compacting cut.** The material is pushed down on to the substrate. Highly suitable for thin materials.



Suitable for/ v_c [m/min]	Alu	Alu	Alu cast > 10 % Si	PMMA acrylic	PE-HD	PA 66	PEEK	PF 31	PVDF GF20	POM GF25	PA 66 GF30	PEEK GF30	PTFE CF25	PEEK CF30	Hybrid	MMC	GRP	CRP
ISO code	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
20 9610–20 9620	2400	2000	1500	1000	900	900	800		1200	1200	1000	1000	1000	800	●	400	500	500

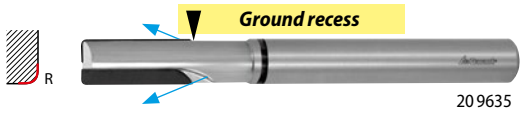
Ø h10 D_c	20 9610	20 9615	20 9620	L_s	L_4	Ø D_4	L_{tot}		45°	GRP CRP f_z	Graphite f_z
	PCD slot drill with internal cooling										
	straight cut	dragging cut	compacting cut								
mm	PCD	PCD	PCD	mm	mm	mm	mm	mm	mm	mm	mm
3	XXX	XXX	XXX	2.5	15	2.8	60	6	0.1	0.01	0.05
4	XXX	XXX	XXX	2.5	15	3.8	60	6	0.1	0.01	0.07
5	XXX	XXX	XXX	3	15	4.6	60	6	0.1	0.02	0.09
6	XXX	XXX	XXX	15	20	5.4	60	6	0.1	0.03	0.1
8	XXX	XXX	XXX	20	30	7.4	80	8	0.1	0.04	0.11
10	XXX	XXX	XXX	20	30	9.4	90	10	0.1	0.06	0.12
12	XXX	XXX	XXX	20	30	11	100	12	0.1	0.08	0.14
16	XXX	XXX	XXX	20	30	15	125	16	0.1	0.1	0.15

PCD | Standard | e8 | 2 | a_e 0.2×D | a_e 0.05×D | h6 DIN 6535 HA

Garant

PCD torus cutter with internal cooling for GRP, CRP, and graphite

High performance PCD slot drill for the **highest demands in respect to material removal rates** when machining **GRP, CRP** and **graphite.**
Straight flutes for a neutral cut.
Tolerance: Corner radius **RS_1 = ±0.01 mm.**



Suitable for/ v_c [m/min]	Alu	Alu	Alu cast > 10 % Si	PMMA acrylic	PE-HD	PA 66	PEEK	PF 31	PVDF GF20	POM GF25	PA 66 GF30	PEEK GF30	PTFE CF25	PEEK CF30	Hybrid	MMC	GRP	CRP
ISO code	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
20 9635	2400	2000	1500	1000	900	900	800		1200	1200	1000	1000	1000	800	●	400	500	500

Ø e8 D_c / RS_1	20 9635	L_s	RS_1	L_4	Ø D_4	L_{tot}		GRP CRP f_z	Graphite f_z	GRP CRP f_z	Graphite f_z
	PCD torus cutter with internal cooling										
	straight cut										
mm	PCD	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
3/0,3	XXX	2.5	0.3	14	2.8	50	6	0.03	0.06	0.05	0.1
4/0,5	XXX	2.5	0.5	14	3.8	50	6	0.03	0.06	0.05	0.1
5/0,5	XXX	3	0.5	18	4.6	54	6	0.04	0.07	0.07	0.12
6/0,5	XXX	6	0.5	21	5.5	57	6	0.04	0.07	0.07	0.12
6/1,0	XXX	6	1	21	5.5	57	6	0.04	0.07	0.07	0.12
8/0,5	XXX	7	0.5	27	7.4	63	8	0.05	0.09	0.08	0.14
10/0,5	XXX	8	0.5	32	9.2	72	10	0.06	0.1	0.09	0.14
10/1,0	XXX	8	1	32	9.2	72	10	0.06	0.1	0.09	0.14

PCD | Standard | e8 | 2 | a_e 0.2×D | a_e 0.05×D | h6 DIN 6535 HA

Garant® PCD ball nose slot drill with internal cooling for GRP, CRP, and graphite

High performance PCD slot drill for the **highest demands in respect to material removal rates** when machining **GRP, CRP** and **graphite.**
Straight flutes for a neutral cut.

20 9655

Suitable for/ v_c [m/min]	Alu	Alu	Alu cast > 10 % Si	PMMA acrylic	PE-HD	PA 66	PEEK	PF 31	PVDF GF20	POM GF25	PA 66 GF30	PEEK GF30	PTFE CF25	PEEK CF30	Hybrid	MMC	GRP	CRP					
ISO code	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N					
20 9655	2400	2000	1500	1000	900	900	800		1200	1200	1000	1000	1000	800	●	400	500	500		●	●	●	●

∅ e8 D_c	11Y	20 9655	L_3	L_4	∅ D_4	L_{tot}		GRP CRP f_z	Graphite f_z	GRP CRP f_z	Graphite f_z
mm		PCD	mm	mm	mm	mm	mm	mm	mm	mm	mm
3		XXX	2.5	9	2.8	60	6	0.03	0.06	0.05	0.1
4		XXX	2.5	15	3.8	60	6	0.03	0.06	0.05	0.1
5		XXX	3	15	4.6	60	6	0.04	0.08	0.07	0.12
6		XXX	6	15	5.5	80	6	0.04	0.08	0.07	0.12
8		XXX	10	20	7.4	80	8	0.05	0.09	0.08	0.14
10		XXX	10	26	9.4	80	10	0.06	0.1	0.09	0.14
12		XXX	10	35	11.2	100	12	0.06	0.1	0.09	0.14
16		XXX	10	35	15	125	16	0.07	0.11	0.1	0.15

Solid carbide | Standard | 0 –0.005 | 2 | a_e 0.5×D | h5 DIN 6535 HA

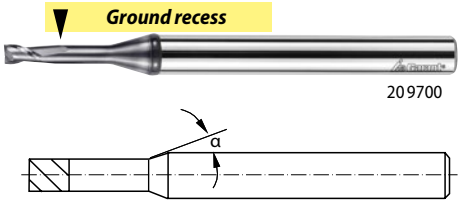
25° ≤ 0.8 mm | 30° ≥ 1 mm

Garant® Solid carbide micro precision slot drill for CRP, GRP and graphite

With **crystalline diamond sp³ coating.** For the **highest demands regarding performance and precision in** fibre-reinforced composites, CRP, GRP, and graphite. **Extremely tight tolerances** ensure maximum accuracy. Double relief ground with 2 hollow-ground chamfers.
Recess angle α = 16°.
Tolerances:
■ Neck ∅: **D_4 = 0 / -0.01 mm.**

Note: At greater tool overhang lengths, use a reduced value for a_p!
Values for:
slots milled from solid: $a_p = 0.1 \times D \times a_{p\,korr}$
side milling: $a_p = 0.2 \times D \times a_{p\,korr}$
To calculate the feed rate vf please use the actual speed of the machine (the maximum possible speed)!
e.g: vf = 18000 [rpm]× fz [mm/Z]× z

90°



20 9700

Suitable for/ v_c [m/min]	PMMA acrylic	PE-HD	PA 66	PEEK	PF 31	AFRP aramid	PVDF GF20	POM GF25	PA 66 GF30	PEEK GF30	PTFE CF25	PEEK CF30	Hybrid	Honey-comb sandwich	MMC	GRP	GRP CRP	Graphite					
ISO code	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N					
20 9700							200	190	170	150	180	160	●	350		190	190	340			●	●	●

∅D_c×L_4	11Y	20 9700	L_3	L_4	∅ D_4	L_{tot}		Graphite f_z	Graphite f_z	Correction factor $a_{p\,corr}$
mm		Diamond	mm	mm	mm	mm	mm	mm	mm	
0,1×0,3		XXX	0.15	0.3	0.08	45	4	0.008	0.012	1
0,1×0,5		XXX	0.15	0.5	0.08	45	4	0.008	0.012	1
0,1×1		XXX	0.15	1	0.08	45	4	0.005	0.007	0.5
0,2×0,5		XXX	0.3	0.5	0.18	45	4	0.008	0.012	1
0,2×1		XXX	0.3	1	0.18	45	4	0.008	0.012	1
0,2×2		XXX	0.3	2	0.18	45	4	0.005	0.007	0.5
0,2×3		XXX	0.3	3	0.18	45	4	0.005	0.007	0.2
0,3×1		XXX	0.4	1	0.28	45	4	0.012	0.016	1
0,3×2		XXX	0.4	2	0.28	45	4	0.012	0.016	0.9
0,3×4		XXX	0.4	4	0.28	45	4	0.008	0.012	0.35

$\varnothing D_c \times L_4$	11Y 20 9700 Solid carbide micro slot drill	L_s	L_4	$\varnothing D_4$	L_{tot}		Graphite f_z	Graphite f_z	Correction factor $a_{p\,corr}$
mm	**Diamond**	mm	mm	mm	mm	mm	mm	mm	
0,3×6	XXX	0.4	6	0.28	45	4	0.005	0.007	0.08
0,4×2	XXX	0.6	2	0.38	45	4	0.012	0.016	1
0,4×4	XXX	0.6	4	0.38	45	4	0.008	0.012	0.5
0,4×6	XXX	0.6	6	0.38	45	4	0.008	0.012	0.2
0,4×8	XXX	0.6	8	0.38	45	4	0.005	0.007	0.08
0,5×2	XXX	0.7	2	0.48	45	4	0.016	0.02	1
0,5×4	XXX	0.7	4	0.48	45	4	0.016	0.02	0.8
0,5×6	XXX	0.7	6	0.48	45	4	0.012	0.016	0.35
0,5×8	XXX	0.7	8	0.48	45	4	0.012	0.016	0.12
0,5×10	XXX	0.7	10	0.48	45	4	0.008	0.012	0.08
0,5×12	XXX	0.7	12	0.48	50	4	0.008	0.012	0.04
0,6×2	XXX	0.9	2	0.58	45	4	0.016	0.02	1
0,6×4	XXX	0.9	4	0.58	45	4	0.016	0.02	0.9
0,6×6	XXX	0.9	6	0.58	45	4	0.012	0.016	0.5
0,6×8	XXX	0.9	8	0.58	45	4	0.012	0.016	0.35
0,6×10	XXX	0.9	10	0.58	50	4	0.012	0.016	0.12
0,6×15	XXX	0.9	15	0.58	60	4	0.008	0.012	0.04
0,8×4	XXX	1.2	4	0.78	45	4	0.016	0.02	1
0,8×6	XXX	1.2	6	0.78	45	4	0.016	0.02	0.8
0,8×8	XXX	1.2	8	0.78	45	4	0.012	0.016	0.8
0,8×10	(XXX)	1.2	10	0.78	50	4	0.012	0.016	0.35
0,8×15	(XXX)	1.2	15	0.78	60	4	0.012	0.016	0.08
0,8×20	(XXX)	1.2	20	0.78	60	4	0.008	0.012	0.04
1×4	XXX	1.5	4	0.95	45	4	0.025	0.03	1
1×6	XXX	1.5	6	0.95	45	4	0.025	0.03	0.9
1×8	XXX	1.5	8	0.95	45	4	0.025	0.03	0.8
1×10	XXX	1.5	10	0.95	50	4	0.02	0.025	0.5
1×12	XXX	1.5	12	0.95	50	4	0.02	0.025	0.35
1×15	XXX	1.5	15	0.95	50	4	0.02	0.025	0.2
1×20	XXX	1.5	20	0.95	60	4	0.016	0.02	0.08
1×25	XXX	1.5	25	0.95	70	4	0.016	0.02	0.04
1×30	XXX	1.5	30	0.95	70	4	0.012	0.016	0.02
1,2×5	XXX	1.8	5	1.14	45	4	0.025	0.03	1
1,2×10	XXX	1.8	10	1.14	45	4	0.025	0.03	0.8
1,2×15	XXX	1.8	15	1.14	50	4	0.02	0.025	0.35
1,2×20	XXX	1.8	20	1.14	60	4	0.02	0.025	0.12
1,2×25	XXX	1.8	25	1.14	70	4	0.016	0.02	0.04
1,2×30	XXX	1.8	30	1.14	70	4	0.012	0.016	0.04
1,4×6	XXX	2.1	6	1.34	45	4	0.025	0.03	1
1,5×5	XXX	2.3	5	1.44	45	4	0.025	0.03	1
1,5×10	XXX	2.3	10	1.44	45	4	0.025	0.03	0.9
1,5×15	XXX	2.3	15	1.44	50	4	0.02	0.025	0.5
1,5×20	XXX	2.3	20	1.44	60	4	0.02	0.025	0.35
1,5×25	XXX	2.3	25	1.44	60	4	0.02	0.025	0.12
1,5×30	XXX	2.3	30	1.44	70	4	0.016	0.02	0.08
1,6×5	XXX	2.4	5	1.51	45	4	0.025	0.03	1
1,6×10	XXX	2.4	10	1.51	45	4	0.025	0.03	0.9
1,6×15	XXX	2.4	15	1.51	50	4	0.02	0.025	0.5
1,6×20	XXX	2.4	20	1.51	60	4	0.02	0.025	0.35
1,8×6	XXX	2.7	6	1.71	45	4	0.03	0.035	1
2×5	XXX	3	5	1.91	45	4	0.03	0.035	1
2×6	XXX	3	6	1.91	45	4	0.03	0.035	1
2×10	XXX	3	10	1.91	45	4	0.03	0.035	1
2×15	XXX	3	15	1.91	50	4	0.03	0.035	0.8
2×20	XXX	3	20	1.91	60	4	0.025	0.03	0.5
2×25	XXX	3	25	1.91	60	4	0.025	0.03	0.35
2×30	XXX	3	30	1.91	70	4	0.025	0.03	0.2
2×40	XXX	3	40	1.91	80	4	0.02	0.025	0.08
2×50	XXX	3	50	1.91	90	4	0.02	0.025	0.08
2,5×8	XXX	3.7	8	2.41	45	4	0.03	0.035	1
2,5×5	XXX	3.7	5	2.41	45	4	0.03	0.035	1
2,5×10	XXX	3.7	10	2.41	45	4	0.03	0.035	1
2,5×12	XXX	3.7	12	2.41	45	4	0.03	0.035	1
2,5×15	XXX	3.7	15	2.41	50	4	0.03	0.035	0.9
2,5×20	XXX	3.7	20	2.41	60	4	0.03	0.035	0.8
2,5×25	XXX	3.7	25	2.41	60	4	0.025	0.03	0.5
2,5×30	XXX	3.7	30	2.41	70	4	0.025	0.03	0.35
2,5×40	XXX	3.7	40	2.41	80	4	0.02	0.025	0.12
2,5×50	XXX	3.7	50	2.41	90	4	0.016	0.02	0.04
3×15	XXX	4.5	15	2.91	50	4	0.03	0.035	1
3×20	XXX	4.5	20	2.91	60	4	0.03	0.035	0.9
3×25	XXX	4.5	25	2.91	60	4	0.03	0.035	0.8
3×30	XXX	4.5	30	2.91	70	4	0.025	0.03	0.5
3×40	XXX	4.5	40	2.91	80	4	0.025	0.03	0.35
3×50	XXX	4.5	50	2.91	90	4	0.025	0.03	0.35
3×60	XXX	4.5	60	2.91	100	4	0.02	0.025	0.04

Solid carbide | Standard | h10 | 2 | 15° | h6 DIN 6535 HA

Garant Solid carbide milling cutter for GRP, CRP, and graphite

With the latest generation of **crystalline diamond coating sp³**, for process reliability in machining **fibre-reinforced composites, CRP, GRP, and graphite.**
Dynamic cutter geometry.
Relief ground with 2 hollow-ground chamfers.
High-precision and **stable** version due to the 15° helix angle.

20 9711

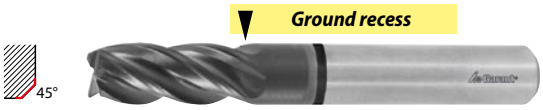
Suitable for/ v_c [m/min]	PMMA acrylic	PE-HD	PA 66	PEEK	PF 31	AFRP aramid	PVDF GF20	POM GF25	PA 66 GF30	PEEK GF30	PTFE CF25	PEEK CF30	Hybrid	Honey-comb sandwich	MMC	GRP	GRP CRP	Graphite
ISO code	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
20 9711							200	190	170	150	180	160	●	350		190	190	340

∅ h10 D_c	11Y	20 9711	L_s	L_{tot}		45°	GRP CRP f_z	Graphite f_z
		Solid carbide slot drill						
mm		Diamond	mm	mm	mm	mm	mm	mm
3		XXX	8	57	6	0.06	0.03	0.03
4		XXX	11	57	6	0.08	0.03	0.03
5		XXX	13	57	6	0.1	0.03	0.03
6		XXX	13	57	6	0.12	0.04	0.04
8		XXX	19	63	8	0.16	0.05	0.05
10		XXX	22	72	10	0.2	0.06	0.06
12		XXX	26	83	12	0.2	0.06	0.06
16		XXX	32	92	16	0.2	0.07	0.07
20		XXX	38	104	20	0.2	0.08	0.08

Solid carbide | Standard | f8 | 4 | 45° | ≠ | h6 DIN 6535 HA | G 2.5 n_{max}

Garant Solid carbide milling cutter for GRP, CRP, and graphite

With the latest generation of **crystalline diamond coating sp³**, for process reliability in machining **fibre-reinforced composites, CRP, GRP, and graphite.**
Dynamic cutter geometry.



20 9713

Suitable for/ v_c [m/min]	PMMA acrylic	PE-HD	PA 66	PEEK	PF 31	AFRP aramid	PVDF GF20	POM GF25	PA 66 GF30	PEEK GF30	PTFE CF25	PEEK CF30	Hybrid	Honey-comb sandwich	MMC	GRP	GRP CRP	Graphite
ISO code	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
20 9713							200	190	170	150	180	160	●	350		190	190	340

∅ f8 D_c	11Y	20 9713	L_s	L_4	∅ D_4	L_{tot}		45°	GRP CRP f_z	Graphite f_z
		Solid carbide milling cutter								
mm		Diamond	mm	mm	mm	mm	mm	mm	mm	mm
6		XXX	13	19	5.9	57	6	0.1	0.04	0.04
8		XXX	19	25	7.8	63	8	0.2	0.05	0.05
10		XXX	22	30	9.7	72	10	0.2	0.06	0.06
12		XXX	26	36	11.7	83	12	0.3	0.06	0.06
16		XXX	32	42	15.5	92	16	0.3	0.07	0.07
20		XXX	38	52	19.5	104	20	0.3	0.08	0.08

Solid carbide | Standard | 0 –0.005 | 2 | a_e 0.5×D | a_e 0.05×D | h5 DIN 6535 HA

25° ≤ 0.8 mm | 30° ≥ 1 mm

Garant

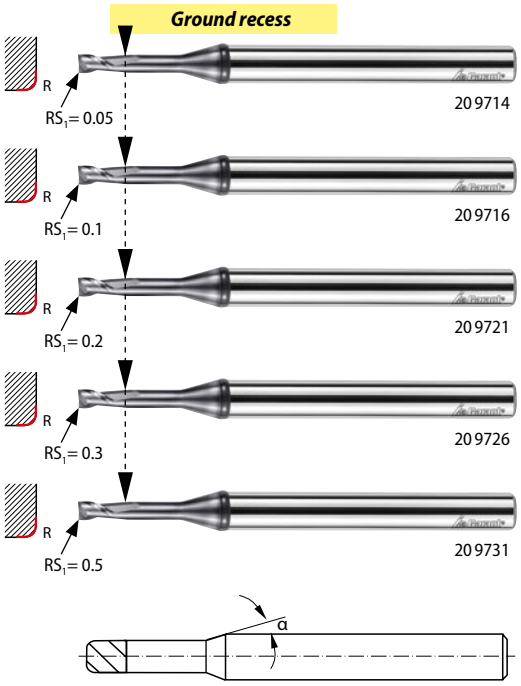
Solid carbide micro precision torus cutter for CRP, GRP and graphite

With **crystalline diamond sp³ coating**. For the **highest demands regarding performance and precision** in fibre-reinforced composites, CRP, GRP, and graphite. **Extremely tight tolerances** ensure maximum accuracy. Double relief ground with 2 hollow-ground chamfers. **Recess angle α = 16°.**

Tolerances:

- Corner radius: **RS_1 = ±0.0025mm**
- Neck ∅: **D_4 = 0 / -0.01 mm**

Note: At greater tool overhang lengths, use a reduced value for a_p!
Values for:
copying: $a_p = 0.10 \times D \times a_{p\ korr}$
side milling: $a_p = 0.20 \times D \times a_{p\ korr}$
To calculate the feed rate vf please use the actual speed of the machine (the maximum possible speed)!
e.g: vf = 18000 [rpm]× fz [mm/Z]× z



Suitable for/ v_c [m/min]	PMMA acrylic	PE-HD	PA 66	PEEK	PF 31	AFRP aramid	PVDF GF20	POM GF25	PA 66 GF30	PEEK GF30	PTFE CF25	PEEK CF30	Hybrid	Honey-comb sandwich	MMC	GRP	GRP CRP	Graphite
ISO code	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
20 9714–20 9731							200	190	170	150	180	160	●	350		190	190	340

∅D_c×L_4	20 9714	20 9716	20 9721	20 9726	20 9731	L_s	L_4	∅ D_4	L_{tot}		Graphite f_z	Graphite f_z	Correction factor $a_{p\ corr}$
	Solid carbide torus cutter												
	RS_1 0.05	RS_1 0.1	RS_1 0.2	RS_1 0.3	RS_1 0.5								
mm	Diamond	Diamond	Diamond	Diamond	Diamond	mm	mm	mm	mm	mm	mm	mm	
0,2×1	XXX	–	–	–	–	0.2	1	0.18	50	4	0.012	0.012	1
0,2×2	XXX	–	–	–	–	0.2	2	0.18	50	4	0.007	0.007	0.5
0,2×3	XXX	–	–	–	–	0.2	3	0.18	50	4	0.007	0.007	0.2
0,3×1	XXX	–	–	–	–	0.3	1	0.28	50	4	0.016	0.016	1
0,3×2	XXX	–	–	–	–	0.3	2	0.28	50	4	0.016	0.016	0.9
0,3×4	XXX	–	–	–	–	0.3	4	0.28	50	4	0.012	0.012	0.35
0,3×6	XXX	–	–	–	–	0.3	6	0.28	50	4	0.007	0.007	0.08
0,4×2	XXX	XXX	–	–	–	0.4	2	0.38	50	4	0.016	0.016	1
0,4×4	XXX	XXX	–	–	–	0.4	4	0.38	50	4	0.012	0.012	0.5
0,4×6	XXX	XXX	–	–	–	0.4	6	0.38	50	4	0.012	0.012	0.2
0,4×8	XXX	XXX	–	–	–	0.4	8	0.38	50	4	0.007	0.007	0.08
0,5×2	XXX	XXX	–	–	–	0.5	2	0.48	50	4	0.02	0.02	1
0,5×4	XXX	XXX	–	–	–	0.5	4	0.48	50	4	0.02	0.02	0.8
0,5×6	XXX	XXX	–	–	–	0.5	6	0.48	50	4	0.016	0.016	0.35
0,5×8	XXX	XXX	–	–	–	0.5	8	0.48	50	4	0.016	0.016	0.12
0,5×10	XXX	XXX	–	–	–	0.5	10	0.48	50	4	0.012	0.012	0.08
0,5×12	XXX	XXX	–	–	–	0.5	12	0.48	50	4	0.012	0.012	0.04
0,6×2	XXX	XXX	–	–	–	0.6	2	0.58	50	4	0.02	0.02	1
0,6×4	XXX	XXX	–	–	–	0.6	4	0.58	50	4	0.02	0.02	0.9
0,6×6	XXX	XXX	–	–	–	0.6	6	0.58	50	4	0.016	0.016	0.5
0,6×8	XXX	XXX	–	–	–	0.6	8	0.58	50	4	0.016	0.016	0.35
0,6×10	XXX	XXX	–	–	–	0.6	10	0.58	50	4	0.016	0.016	0.12

$\varnothing D_c \times L_4$	20 9714	20 9716	20 9721	20 9726	20 9731	L_s	L_4	$\varnothing D_4$	L_{tot}		Graphite f_z	Graphite f_z	Correction factor $a_{p\,corr}$
	Solid carbide torus cutter												
	RS_1 0.05	RS_1 0.1	RS_1 0.2	RS_1 0.3	RS_1 0.5								
mm	Diamond	Diamond	Diamond	Diamond	Diamond	mm	mm	mm	mm	mm	mm	mm	
0,6×15	XXX	XXX	–	–	–	0.6	15	0.58	60	4	0.012	0.012	0.04
0,8×4	XXX	XXX	XXX	–	–	0.8	4	0.78	50	4	0.02	0.02	1
0,8×6	XXX	XXX	XXX	–	–	0.8	6	0.78	50	4	0.02	0.02	0.8
0,8×8	XXX	XXX	XXX	–	–	0.8	8	0.78	50	4	0.016	0.016	0.8
0,8×10	XXX	XXX	XXX	–	–	0.8	10	0.78	50	4	0.016	0.016	0.35
0,8×15	XXX	XXX	XXX	–	–	0.8	15	0.78	60	4	0.016	0.016	0.08
0,8×20	XXX	XXX	XXX	–	–	0.8	20	0.78	60	4	0.012	0.012	0.04
1×4	XXX	XXX	XXX	XXX	–	1	4	0.95	50	4	0.03	0.03	1
1×6	XXX	XXX	XXX	XXX	–	1	6	0.95	50	4	0.03	0.03	0.9
1×8	XXX	XXX	XXX	XXX	–	1	8	0.95	50	4	0.03	0.03	0.8
1×10	XXX	XXX	XXX	XXX	–	1	10	0.95	50	4	0.025	0.025	0.5
1×15	XXX	XXX	XXX	XXX	–	1	15	0.95	60	4	0.025	0.025	0.2
1×20	XXX	XXX	XXX	XXX	–	1	20	0.95	60	4	0.02	0.02	0.08
1×25	XXX	XXX	XXX	XXX	–	1	25	0.95	70	4	0.02	0.02	0.04
1×30	XXX	XXX	XXX	XXX	–	1	30	0.95	70	4	0.016	0.016	0.02
1,2×5	–	–	XXX	XXX	–	1.2	5	1.14	50	4	0.03	0.03	1
1,2×10	–	–	XXX	XXX	–	1.2	10	1.14	50	4	0.03	0.03	0.8
1,2×15	–	–	XXX	XXX	–	1.2	15	1.14	60	4	0.025	0.025	0.35
1,2×20	–	–	XXX	XXX	–	1.2	20	1.14	60	4	0.025	0.025	0.12
1,2×25	–	–	XXX	XXX	–	1.2	25	1.14	70	4	0.02	0.02	0.04
1,2×30	–	–	XXX	XXX	–	1.2	30	1.14	70	4	0.016	0.016	0.04
1,5×10	–	–	XXX	XXX	XXX	1.5	10	1.44	50	4	0.03	0.03	0.9
1,5×15	–	–	XXX	XXX	XXX	1.5	15	1.44	60	4	0.025	0.025	0.5
1,5×20	–	–	XXX	XXX	XXX	1.5	20	1.44	60	4	0.025	0.025	0.35
1,5×25	–	–	XXX	XXX	XXX	1.5	25	1.44	60	4	0.025	0.025	0.12
1,5×30	–	–	XXX	XXX	XXX	1.5	30	1.44	70	4	0.02	0.02	0.08
1,6×5	–	–	XXX	XXX	XXX	1.6	5	1.54	50	4	0.03	0.03	1
1,6×10	–	–	XXX	XXX	XXX	1.6	10	1.54	50	4	0.03	0.03	0.9
1,6×15	–	–	XXX	XXX	XXX	1.6	15	1.54	60	4	0.025	0.025	0.5
1,6×20	–	–	XXX	XXX	XXX	1.6	20	1.54	60	4	0.025	0.025	0.35
2×5	–	XXX	XXX	XXX	XXX	2	5	1.91	50	4	0.035	0.035	1
2×10	–	XXX	XXX	XXX	XXX	2	10	1.91	50	4	0.035	0.035	1
2×15	–	XXX	XXX	XXX	XXX	2	15	1.91	60	4	0.035	0.035	0.8
2×20	–	XXX	XXX	XXX	XXX	2	20	1.91	60	4	0.03	0.03	0.5
2×25	–	XXX	XXX	XXX	XXX	2	25	1.91	70	4	0.03	0.03	0.35
2×30	–	XXX	XXX	XXX	XXX	2	30	1.91	70	4	0.03	0.03	0.2
2×40	–	XXX	XXX	XXX	XXX	2	40	1.91	80	4	0.025	0.025	0.08
2×50	–	XXX	XXX	XXX	XXX	2	50	1.91	90	4	0.025	0.025	0.08
2,5×5	–	XXX	XXX	XXX	XXX	2.5	5	2.41	50	4	0.035	0.035	1
2,5×10	–	XXX	XXX	XXX	XXX	2.5	10	2.41	50	4	0.035	0.035	1
2,5×15	–	XXX	XXX	XXX	XXX	2.5	15	2.41	60	4	0.035	0.035	0.9
2,5×20	–	XXX	XXX	XXX	XXX	2.5	20	2.41	60	4	0.035	0.035	0.8
2,5×25	–	XXX	(XXX)	(XXX)	(XXX)	2.5	25	2.41	70	4	0.03	0.03	0.5
2,5×30	–	XXX	XXX	XXX	XXX	2.5	30	2.41	70	4	0.03	0.03	0.35
2,5×40	–	XXX	XXX	XXX	XXX	2.5	40	2.41	80	4	0.025	0.025	0.12
2,5×50	–	XXX	XXX	XXX	XXX	2.5	50	2.41	90	4	0.02	0.02	0.04
3×15	–	–	XXX	XXX	XXX	4.5	15	2.91	60	4	0.035	0.035	1
3×20	–	–	XXX	XXX	XXX	4.5	20	2.91	60	4	0.035	0.035	0.9
3×25	–	–	XXX	XXX	XXX	4.5	25	2.91	70	4	0.035	0.035	0.8
3×30	–	–	XXX	XXX	XXX	4.5	30	2.91	70	4	0.03	0.03	0.5
3×40	–	–	XXX	XXX	XXX	4.5	40	2.91	80	4	0.03	0.03	0.35
3×50	–	–	XXX	XXX	XXX	4.5	50	2.91	90	4	0.03	0.03	0.35
3×60	–	–	XXX	XXX	XXX	4.5	60	2.91	100	4	0.025	0.025	0.04

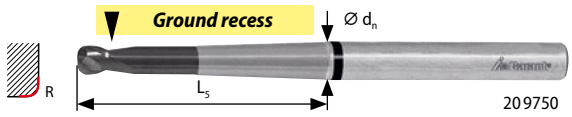
Solid carbide | Standard | e8 | 2 | 30° | a_e 0.5×D | a_e 0.05×D | h6 DIN 6535 HA

Garant

Solid carbide torus cutter for GRP, CRP, and graphite

With the latest generation of **crystalline diamond coating sp³**, for process reliability in machining **fibre-reinforced composites, CRP, GRP and graphite.** Double relief ground side clearance angle.
For copy milling with angle α = 1°30'.
Tolerance: Corner radius **RS_1 = ± 0.01 mm.**

Note: Standard application values
Side milling: f_z for a_p = 0.1×D.

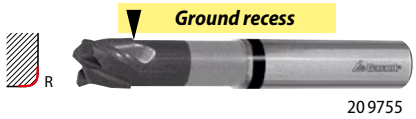


20 9750

Suitable for/ v_c [m/min]	PMMA acrylic	PE-HD	PA 66	PEEK	PF 31	AFRP aramid	PVDF GF20	POM GF25	PA 66 GF30	PEEK GF30	PTFE CF25	PEEK CF30	Hybrid	Honey-comb sandwich	MMC	GRP	GRP CRP	Graphite
ISO code	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
20 9750							200	190	170	150	180	160	●	350		190	190	340

Ø e8 D_c / RS_1	11Y 20 9750 Solid carbide torus cutter	L_5	RS_1	L_4	Ø D_4	L_{tot}		L_5	Ø d_n	Graphite f_z	Graphite f_z
mm	Diamond	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
1/0,1	XXX	1.2	0.1	2	0.95	75	3	27	2.3	0.0113	0.016
1/0,25	(XXX)	2	0.25	4	0.85	80	6	40	2.7	0.0113	0.016
1,2/0,12	XXX	1.4	0.12	2.4	1.15	75	3	27	2.5	0.0165	0.0234
1,5/0,15	XXX	1.8	0.15	3	1.45	75	3	27	2.7	0.02	0.028
2/0,2	XXX	2.4	0.2	4	1.95	75	3	27	3	0.022	0.031
2/0,5	XXX	2	0.5	8	1.8	80	6	40	3.5	0.022	0.031
3/0,3	XXX	3.6	0.3	6	2.95	75	4	27	4	0.024	0.032
3/0,5	XXX	2	0.5	12	2.8	80	6	40	4.3	0.024	0.032
4/1,0	XXX	3	1	16	3.8	80	6	40	5.1	0.026	0.034
6/1,0	XXX	4	1	25	5.8	100	8	50	7.1	0.035	0.04
6/2,0	XXX	4	2	25	5.8	100	8	50	7.1	0.035	0.04
8/1,0	XXX	4	1	32	7.8	120	10	60	9.3	0.08	0.085
8/2,0	(XXX)	4	2	32	7.8	120	10	60	9.3	0.08	0.085
10/1,5	(XXX)	6	1.5	40	9.8	160	12	70	11.9	0.095	0.1

Solid carbide | Standard | e8 | 4 | 30° | a_e 0.2×D | a_e 0.05×D | h6 DIN 6535 HA

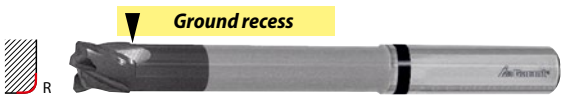


20 9755

Garant

Solid carbide torus cutter for GRP, CRP, and graphite

With the latest generation of **crystalline diamond coating sp³**, for process reliability in machining **fibre-reinforced composites, CRP, GRP and graphite.**
Double relief ground side clearance angle.
Tolerance: Corner radius **RS_1 = ± 0.01 mm.**



20 9758

Suitable for/ v_c [m/min]	PMMA acrylic	PE-HD	PA 66	PEEK	PF 31	AFRP aramid	PVDF GF20	POM GF25	PA 66 GF30	PEEK GF30	PTFE CF25	PEEK CF30	Hybrid	Honey-comb sandwich	MMC	GRP	GRP CRP	Graphite
ISO code	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
20 9755/9758							200	190	170	150	180	160	●	350		190	190	340

Ø e8 D_c / RS_1	11Y 20 9755	11Y 20 9758 Solid carbide torus cutter	L_5	RS_1	L_4		Ø D_4	L_{tot}			Graphite f_z	Graphite f_z
					20 9755	20 9758		20 9755	20 9758			
mm	Diamond	Diamond	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
3/0,3	XXX	XXX	4	0.3	14	32	2.7	50	75	3	0.02	0.02
3/0,5	XXX	XXX	4	0.5	14	32	2.7	50	75	3	0.02	0.02
3/1,0	XXX	XXX	4	1	14	32	2.7	50	75	3	0.02	0.02
4/0,4	XXX	XXX	5	0.4	16	36	3.7	50	75	4	0.02	0.02
4/0,5	XXX	XXX	5	0.5	16	36	3.7	50	75	4	0.02	0.02
4/1,0	XXX	XXX	5	1	16	36	3.7	50	75	4	0.02	0.02
5/0,5	XXX	XXX	6	0.5	18	40	4.6	54	75	5	0.052	0.052
5/1,0	XXX	XXX	6	1	18	40	4.6	54	75	5	0.052	0.052
6/0,5	XXX	XXX	7	0.5	21	44	5.5	57	80	6	0.052	0.052
6/1,0	XXX	(XXX)	7	1	21	44	5.5	57	80	6	0.052	0.052
6/1,5	(XXX)	(XXX)	7	1.5	21	44	5.5	57	80	6	0.052	0.052
8/0,5	(XXX)	(XXX)	9	0.5	27	54	7.4	63	100	8	0.078	0.078
8/1,0	XXX	XXX	9	1	27	54	7.4	63	100	8	0.078	0.078
8/1,5	XXX	XXX	9	1.5	27	54	7.4	63	100	8	0.078	0.078
8/2,0	XXX	XXX	9	2	27	54	7.4	63	100	8	0.078	0.078
10/0,5	XXX	XXX	11	0.5	32	60	9.2	72	100	10	0.091	0.091
10/1,0	XXX	XXX	11	1	32	60	9.2	72	100	10	0.091	0.091
10/1,5	XXX	XXX	11	1.5	32	60	9.2	72	100	10	0.091	0.091
10/2,0	XXX	XXX	11	2	32	60	9.2	72	100	10	0.091	0.091
12/0,5	XXX	XXX	12	0.5	38	75	11	83	120	12	0.105	0.105
12/1,0	XXX	XXX	12	1	38	75	11	83	120	12	0.105	0.105
12/1,5	XXX	XXX	12	1.5	38	75	11	83	120	12	0.105	0.105
12/2,0	XXX	XXX	12	2	38	75	11	83	120	12	0.105	0.105

Solid carbide | Standard | e8 | 4 | 30° | ≠ | a_e 0.2×D | a_e 0.05×D | h6 DIN 6535 HA

Garant® Solid carbide torus cutter for GRP, CRP, and graphite

With the latest generation of **crystalline diamond coating sp³**, for process reliability in machining **fibre-reinforced composites, CRP, GRP and graphite.** Double relief ground side clearance angle.
Tolerance: **Corner radius RS_1 = ± 0.01 mm.**

20 9760

Suitable for/ v_c [m/min]	PMMA acrylic	PE-HD	PA 66	PEEK	PF 31	AFRP aramid	PVDF GF20	POM GF25	PA 66 GF30	PEEK GF30	PTFE CF25	PEEK CF30	Hybrid	Honey-comb sandwich	MMC	GRP	GRP CRP	Graphite					
ISO code	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N					
20 9760							200	190	170	150	180	160	●	350		190	190	340			●	●	●

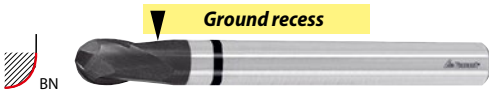
Ø e8 D_C / RS_1	11Y 20 9760 Solid carbide torus cutter	L_s	RS_1	L_4	Ø D_4	L_{tot}		Graphite f_z	Graphite f_z
mm	Diamond	mm	mm	mm	mm	mm	mm	mm	mm
4/0,4	XXX	5	0.4	60	3.7	100	4	0.02	0.02
6/0,5	XXX	7	0.5	70	5.5	120	6	0.052	0.052
8/0,5	XXX	9	0.5	75	7.4	120	8	0.078	0.078
10/0,5	XXX	11	0.5	80	9.2	120	10	0.091	0.091
10/1,0	XXX	11	1	80	9.2	120	10	0.091	0.091
12/0,5	XXX	12	0.5	100	11	160	12	0.105	0.105
12/2,0	XXX	12	2	100	11	160	12	0.105	0.105

Solid carbide | Standard | f8 | 2 | 30° | a_e 0.2×D | a_e 0.05×D | h6 DIN 6535 HA

Garant® Solid carbide ball nose slot drill for GRP, CRP, and graphite

With the latest generation of **crystalline diamond coating sp³**, for process reliability in machining **fibre-reinforced composites, CRP, GRP and graphite.** Double relief ground side clearance angle.
Tolerance: Radius contour = **±0.01 mm.**

20 9776



20 9781

Suitable for/ v_c [m/min]	PMMA acrylic	PE-HD	PA 66	PEEK	PF 31	AFRP aramid	PVDF GF20	POM GF25	PA 66 GF30	PEEK GF30	PTFE CF25	PEEK CF30	Hybrid	Honey-comb sandwich	MMC	GRP	GRP CRP	Graphite					
ISO code	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N					
20 9776/9781							200	190	170	150	180	160	●	350		190	190	340			●	●	●

Ø f8 D_C / D_S	11Y 20 9776	11Y 20 9781 Solid carbide ball nose slot drill	L_s	L_4		Ø D_4	L_{tot}			Graphite f_z	Graphite f_z
				20 9776	20 9781		20 9776	20 9781			
mm	Diamond	Diamond	mm	mm	mm	mm	mm	mm	mm	mm	mm
1	XXX	–	2	3	–	0.95	50	–	3	0.011	0.011
1/6	XXX	XXX	2	3	16	0.95	54	80	6	0.011	0.011
1,2	XXX	–	3	4	–	1.05	50	–	3	0.011	0.011
1,4	XXX	–	3	4	–	1.15	50	–	3	0.011	0.011
1,5	XXX	–	3	5	–	1.35	50	–	3	0.011	0.011
1,5/6	XXX	XXX	3	5	22	1.44	54	80	6	0.011	0.011
1,6	XXX	–	4	6	–	1.54	50	–	3	0.011	0.011
1,8	XXX	–	4	7	–	1.74	50	–	3	0.022	0.022
2	XXX	–	4	8	–	1.92	50	–	3	0.022	0.022
2/6	XXX	XXX	4	8	28	1.92	54	80	6	0.022	0.022
2,5	XXX	–	5	9	–	2.4	50	–	3	0.022	0.022
2,5/6	XXX	–	5	9	–	2.4	54	–	6	0.022	0.022
3	XXX	XXX	5	9	33	2.9	50	75	3	0.023	0.023
3/6	XXX	XXX	5	9	33	2.9	54	80	6	0.023	0.023
4	(XXX)	(XXX)	8	12	36	3.9	54	75	4	0.023	0.023
4/6	(XXX)	(XXX)	8	12	36	3.9	54	80	6	0.023	0.023
5	(XXX)	XXX	9	16	40	4.9	54	75	5	0.05	0.05
5/6	XXX	–	9	16	–	4.9	54	–	6	0.05	0.05
6	XXX	XXX	10	17	46	5.9	54	100	6	0.05	0.05
8	XXX	XXX	12	20.5	54	7.8	58	100	8	0.075	0.075
10	XXX	XXX	14	26	60	9.8	66	100	10	0.09	0.09
12	XXX	XXX	16	28	60	11.8	73	100	12	0.105	0.105
16	XXX	XXX	22	32	92	15.7	82	150	16	0.115	0.115
20	XXX	XXX	26	36	92	19.7	92	150	20	0.13	0.13

Solid carbide | Standard | f8 | 2 | 30° | a_e 0.2×D | a_e 0.05×D | h6 DIN 6535 HA

Garant Solid carbide ball nose slot drill for GRP, CRP, and graphite

With the latest generation of **crystalline diamond coating sp³**, for process reliability in machining **fibre-reinforced composites, CRP, GRP and graphite.**
Double relief ground side clearance angle.
Tolerance: Radius contour = **±0.01 mm.**

20 9783

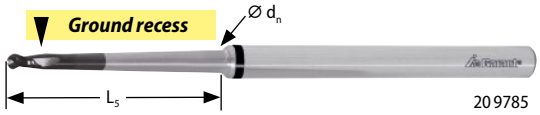
Suitable for/ v_c [m/min]	PMMA acrylic	PE-HD	PA 66	PEEK	PF 31	AFRP aramid	PVDF GF20	POM GF25	PA 66 GF30	PEEK GF30	PTFE CF25	PEEK CF30	Hybrid	Honey-comb sandwich	MMC	GRP	GRP CRP	Graphite
ISO code	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
20 9783							200	190	170	150	180	160	●	350		190	190	340

Ø f8 D_C	11Y 20 9783 Solid carbide ball nose slot drill	L_s	L_4	Ø D_4	L_{tot}		Graphite f_z	Graphite f_z
mm	Diamond	mm	mm	mm	mm	mm	mm	mm
4	XXX	8	60	3.9	100	4	0.023	0.023
5	XXX	9	65	4.8	100	5	0.05	0.05
6	XXX	10	70	5.8	120	6	0.05	0.05
8	XXX	12	75	7.7	120	8	0.075	0.075
10	XXX	14	80	9.7	120	10	0.09	0.09

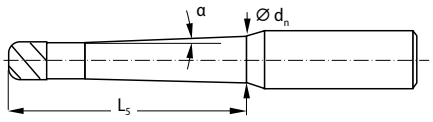
Solid carbide | Standard | e8 | 2 | 30° | a_e 0.05×D | h6 DIN 6535 HA

Garant Solid carbide ball nose slot drill for GRP, CRP, and graphite

With the latest generation of **crystalline diamond coating sp³** for process reliability in machining **fibre-reinforced composites, CRP, GRP and graphite.**
Taper transition **with 1°30′ (angle α).**
Tolerance: Radius contour = **±0.01 mm.**



20 9785



Suitable for/ v_c [m/min]	PMMA acrylic	PE-HD	PA 66	PEEK	PF 31	AFRP aramid	PVDF GF20	POM GF25	PA 66 GF30	PEEK GF30	PTFE CF25	PEEK CF30	Hybrid	Honey-comb sandwich	MMC	GRP	GRP CRP	Graphite
ISO code	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
20 9785							200	190	170	150	180	160	●	350		190	190	340

Ø e8 D_C	11Y 20 9785 Solid carbide ball nose slot drill	L_s	L_4	Ø D_4	L_{tot}		L_5	Ø d_n	Graphite f_z
mm	Diamond	mm	mm	mm	mm	mm	mm	mm	mm
1	XXX	1.2	2	0.95	75	3	27	2.3	0.007
1,2	XXX	1.4	2.4	1.15	75	3	27	2.5	0.007
1,5	XXX	1.8	3	1.45	75	3	27	2.7	0.007
2	XXX	2.4	4	1.95	75	3	27	3	0.007
3	XXX	4	12	2.8	80	6	40	4.3	0.025
4	(XXX)	5	16	3.8	80	6	40	5.1	0.025
5	(XXX)	6	20	4.8	80	6	40	5.9	0.062
6	XXX	6	25	5.8	100	8	50	7.1	0.062
8	XXX	7	32	7.8	120	10	60	9.3	0.078
10	XXX	9	40	9.8	160	12	80	11.9	0.091
12	XXX	11	50	11.8	200	16	100	14.5	0.105

Solid carbide | Standard | 0 –0.005 | 2 | a_e 0.05×D | h5 DIN 6535 HA

25° 30°

≤ 0.8 mm ≥ 1 mm

Garant

Solid carbide micro precision copy slot drill for CRP, GRP and graphite

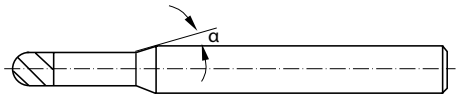
With **crystalline diamond sp³ coating.** For the **highest demands regarding performance and precision in** fibre-reinforced composites, CRP, GRP, and graphite. **Extremely tight tolerances** ensure maximum accuracy. Double relief ground with 2 hollow-ground chamfers.
Recess angle α = 16°.

Tolerances:

- Corner radius: **Radius contour 0 /-0.005 mm.**
- Neck ∅: **D_4 = 0 / -0.01 mm.**

Note: At greater tool overhang lengths, use a reduced value for a_p!
values for:
copying: $a_p = 0.15 \times D \times a_{p\,korr}$
To calculate the feed rate vf please use the actual speed of the machine (the maximum possible speed)!
e.g: vf = 18000 [rpm]× fz [mm/Z]× z

20 9791



Suitable for/ v_c [m/min]	PMMA acrylic	PE-HD	PA 66	PEEK	PF 31	AFRP aramid	PVDF GF20	POM GF25	PA 66 GF30	PEEK GF30	PTFE CF25	PEEK CF30	Hybrid	Honey-comb sandwich	MMC	GRP	GRP CRP	Graphite					
ISO code	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N					
20 9791							200	190	170	150	180	160	●	350		190	190	340			●	●	●

$D_c \times L_4$	11Y 20 9791 Solid carbide copy slot drill	L_s	L_4	∅ D_4	L_{tot}		Graphite f_z	Correction factor $a_{p\,corr}$
mm	Diamond	mm	mm	mm	mm	mm	mm	
0,2×0,5	XXX	0.16	0.5	0.17	45	4	0.012	1
0,2×1	XXX	0.16	1	0.17	45	4	0.012	1
0,2×2	XXX	0.16	2	0.17	45	4	0.007	0.5
0,2×3	XXX	0.16	3	0.17	45	4	0.007	0.2
0,3×1	XXX	0.24	1	0.27	45	4	0.016	1
0,3×2	XXX	0.24	2	0.27	45	4	0.016	0.9
0,3×4	XXX	0.24	4	0.27	45	4	0.012	0.35
0,3×6	XXX	0.24	6	0.27	45	4	0.007	0.08
0,4×2	XXX	0.32	2	0.37	45	4	0.016	1
0,4×4	XXX	0.32	4	0.37	45	4	0.012	0.5
0,4×6	XXX	0.32	6	0.37	45	4	0.012	0.2
0,4×8	XXX	0.32	8	0.37	45	4	0.007	0.08
0,5×2	XXX	0.4	2	0.47	45	4	0.02	1
0,5×4	XXX	0.4	4	0.47	45	4	0.02	0.8
0,5×6	XXX	0.4	6	0.47	45	4	0.016	0.35
0,5×8	XXX	0.4	8	0.47	45	4	0.016	0.12
0,5×10	XXX	0.4	10	0.47	50	4	0.012	0.08
0,5×12	XXX	0.4	12	0.47	50	4	0.012	0.04
0,6×2	XXX	0.48	2	0.57	45	4	0.02	1
0,6×4	XXX	0.48	4	0.57	45	4	0.02	0.9
0,6×6	XXX	0.48	6	0.57	45	4	0.016	0.5
0,6×8	XXX	0.48	8	0.57	45	4	0.016	0.35
0,6×10	XXX	0.48	10	0.57	50	4	0.016	0.12
0,6×15	XXX	0.48	15	0.57	60	4	0.012	0.08
0,8×4	XXX	0.64	4	0.77	45	4	0.02	1
0,8×6	XXX	0.64	6	0.77	45	4	0.02	0.8
0,8×8	XXX	0.64	8	0.77	45	4	0.016	0.5
0,8×10	XXX	0.64	10	0.77	50	4	0.016	0.35

$D_c \times L_4$	11Y 20 9791 Solid carbide copy slot drill	L_s	L_4	$\varnothing D_4$	L_{tot}		Graphite f_z	Correction factor $a_{p\,corr}$
mm	Diamond	mm	mm	mm	mm	mm	mm	
0,8×15	XXX	0.64	15	0.77	60	4	0.016	0.2
0,8×20	XXX	0.64	20	0.77	60	4	0.012	0.08
1×4	XXX	0.8	4	0.96	45	4	0.03	1
1×6	XXX	0.8	6	0.96	45	4	0.03	0.9
1×8	XXX	0.8	8	0.96	45	4	0.03	0.8
1×10	XXX	0.8	10	0.96	50	4	0.025	0.5
1×12	XXX	0.8	12	0.96	50	4	0.025	0.35
1×15	XXX	0.8	15	0.96	60	4	0.025	0.2
1×16	XXX	0.8	16	0.96	60	4	0.025	0.15
1×20	XXX	0.8	20	0.96	60	4	0.02	0.08
1×25	XXX	0.8	25	0.96	70	4	0.02	0.04
1×30	XXX	0.8	30	0.96	70	4	0.016	0.02
1,2×5	XXX	0.96	5	1.16	45	4	0.03	1
1,2×10	XXX	0.96	10	1.16	45	4	0.03	0.8
1,2×15	XXX	0.96	15	1.16	50	4	0.025	0.35
1,2×20	XXX	0.96	20	1.16	60	4	0.025	0.12
1,2×25	XXX	0.96	25	1.16	60	4	0.02	0.08
1,2×30	XXX	0.96	30	1.16	70	4	0.016	0.04
1,5×10	XXX	1.2	10	1.44	45	4	0.03	0.9
1,5×15	XXX	1.2	15	1.44	50	4	0.025	0.5
1,5×20	XXX	1.2	20	1.44	60	4	0.025	0.35
1,5×25	XXX	1.2	25	1.44	70	4	0.025	0.12
1,5×30	XXX	1.2	30	1.44	70	4	0.02	0.08
1,6×5	XXX	1.28	5	1.54	45	4	0.03	1
1,6×10	XXX	1.28	10	1.54	45	4	0.03	0.9
1,6×15	XXX	1.28	15	1.54	50	4	0.025	0.5
1,6×20	XXX	1.28	20	1.54	60	4	0.025	0.35
2×5	XXX	1.6	5	1.94	45	4	0.035	1
2×10	XXX	1.6	10	1.94	45	4	0.035	1
2×15	XXX	1.6	15	1.94	50	4	0.035	0.8
2×16	XXX	1.6	16	1.94	50	4	0.035	0.7
2×20	XXX	1.6	20	1.94	60	4	0.03	0.5
2×25	XXX	1.6	25	1.94	70	4	0.03	0.35
2×30	XXX	1.6	30	1.94	70	4	0.03	0.2
2×40	XXX	1.6	40	1.94	80	4	0.025	0.04
2×50	XXX	1.6	50	1.94	90	4	0.025	0.02
2,5×5	XXX	2	5	2.41	45	4	0.035	1
2,5×10	XXX	2	10	2.41	45	4	0.035	1
2,5×15	XXX	2	15	2.41	50	4	0.035	0.9
2,5×20	XXX	2	20	2.41	60	4	0.035	0.8
2,5×25	XXX	2	25	2.41	70	4	0.03	0.5
2,5×30	XXX	2	30	2.41	70	4	0.03	0.35
2,5×40	XXX	2	40	2.41	80	4	0.025	0.12
2,5×50	XXX	2	50	2.41	90	4	0.02	0.08
3×15	XXX	3.5	15	2.92	60	4	0.035	1
3×20	XXX	3.5	20	2.92	60	4	0.035	0.9
3×25	XXX	3.5	25	2.92	60	4	0.035	0.8
3×30	XXX	3.5	30	2.92	70	4	0.03	0.5
3×40	XXX	3.5	40	2.92	80	4	0.03	0.35
3×50	XXX	3.5	50	2.92	90	4	0.03	0.12
3×60	XXX	3.5	60	2.92	100	4	0.025	0.08

Overview – milling cutters range Group 21 / 22

Type		Copy milling cutters					High feed rate milling cutter		
Designation >	TopCut					5720VZ16	Power Q	Power Q	Power Q
Brand	Garant	Garant	Garant	Garant	Garant	KENNAMETAL	Garant	Garant	Garant
Item number	210550–212000	211806–211852	212534 – 212542	212070–212170	212590–212620	220800–220806	212802–212804	212807–212812	212813–212817
Diameter (mm)	6.3 – 25	16 – 80	16 – 66	10 – 125	8 – 32	25 – 80	16 – 22	25 – 52	30 – 100
$a_{p\,max}$ (mm)	0.3 – 30	5 – 15	2.5 – 3	1.1 – 5	0.3 – 5.5	16	0.5 – 1.1	0.7 – 1.3	0.8 – 1.5
Approach angle		90° / 93°				90°			
Number of cutting edges	2 – 6	2 – 5	3 – 8	2 – 10	2	2 – 5	2 – 3	2 – 5	2 – 7
Interface	Plain shank / Weldon shank/ SK 40 / HSK-A 63	Weldon shank / thread / bore	Thread / bore	Plain shank / Weldon shank / thread / bore	Plain shank / thread	Plain shank / thread / bore	Plain shank / Weldon shank / thread /	Plain shank / Weldon shank / thread / bore	
Cooling channels IC	(IC)	IC	IC	IC	IC	IC	IC	IC	IC
Suitable insert									
Insert type / ISO	Milling heads	VDGT / VCG.	CPHX06 / 09	RD..		ZDET 16	XOM.0603	XDM.0904	XDM.1205
Item number	210050–210410	211853–211864	212552 – 212578	212178–212310	212630 – 212799	220810–220832	212819–212854	212860–212885	212887–212899
Further application									
ISO code	N P H M S K	N _ _ _ _ _	_ P H M _ K	N P H M S K	N P H M S K	N _ _ _ _ _	_ P H M S K	_ P H M S K	_ P H M S K
Page	523 – 529	531 – 533	539 – 540	534 – 538	540 – 542	604	543 – 545	543 – 545	543 – 545

Type	Indexable face mill							End mill		
Designation >	TwinCut	Softcut®45				MFPN45	MSRS	Aluking	Softcut®HSI12	Softcut®HSI08
Brand	Garant	Garant	Garant	Garant	Garant	KYOCERA	KYOCERA	Garant	Garant	Garant
Item number	213410–213420	213555	213890	214200–214205	214395–214400	222800	224000	214515	214853 – 214857	214902 – 214908
Diameter (mm)	40 – 250	32– 250	50 – 250	32 – 250	16 – 125	63 – 250	80 – 315	40 – 125	32 – 160	20 – 100
$a_{p\,max}$ (mm)	3 – 6	4	3.5	1.5 – 3.5	3	6	12	5 – 10	10	6
Approach angle	45°	45°	45°	45°	45°	47.5°	75°	90°	90°	90°
Number of cutting edges	3 – 18	3 – 16	4 – 13	3 – 16	2 – 14	4 – 20	4 – 16	2 – 8	2 – 14	2 – 10
Interface	Bore	Bore	Bore	Bore	Weldon shank / bore	Bore	Bore	Bore	Thread / bore	Weldon shank / thread / bore
Cooling channels IC	IC	IC	IC	IC	IC			IC	IC	IC
Suitable insert										
Insert type / ISO	ON.U05 / SN.U14	SE.T1305	SE..1203	SE..1204	SD..0903	PN.U 1205	SMPT 1806	BGHX 15L5	SO.T 1205	SO.T 0836
Item number	213424–213470	213564 – 213596	213905–213961	214240 – 214352	214438–214481	222805 – 222826	224010 – 224029	214525 – 214565	214860 – 214890	214914 – 214956
Further application										
ISO – code	N P _ M _ K	N P _ M _ K	N P H M S K	N P H M S K	N P _ M S K	_ P _ M S K	_ P _ _ _ K	N P _ M _ K	N P _ M _ K	N P _ M _ K
Page	556 – 557	558	559	560	561	611	613	562	563 – 564	564 – 566

Overview – Milling cutter range Group 21 / 22

	High feed rate milling cutter								Indexable face mill
	Power Q Double	**Power Q Double**	**Feedking**	**Hi5**	**MFH micro**	**MFH mini**	**MFH**	**7792VX**	**43° Octo**
	Garant	Garant	Garant	Garant	KYOCERA	KYOCERA	KYOCERA	KENNAMETAL	Garant
	213000 – 213006	**213014**	**212900– 212910**	**213110– 213210**	**221941– 221943**	**221950– 221965**	**222050– 222065**	**221900– 221908**	**213300**
	25 – 66	50 – 100	18 – 100	25 – 125	8 – 16	16 – 52	25 – 160	16 – 160	32 – 125
	0.6 – 1.2	0.8 – 1.5	0.85 – 1.8	1.4 – 2.2	0.5	1	1.5 – 5	0.9 – 3.5	2.2 – 3.5
									43°
	2 – 7	4 – 8	2 – 9	2 – 10	1 – 4	2 – 8	2 – 8	2 – 12	3 – 8
	Plain shank / Weldon shank / thread / bore	Bore	Plain shank / Weldon shank / thread / bore	Weldon shank / thread / bore	Plain shank / Weldon shank / thread	Plain shank / Weldon shank / thread / bore	Plain shank / Weldon shank / thread / bore	Plain shank / Weldon shank / thread / bore	Bore
	IC	IC	IC	IC	IC	IC	IC	IC	IC
	XOMU094812	XOMU146714	XDL. / XDP.	POMX	LPGT 0102	LOGU 0303	SOMT	X.L.	OF..0504
	213024 – 213036	**213038 – 213050**	**212921– 212991**	**213122– 213193**	**221946– 221949**	**221970– 221976**	**222070– 222092**	**221920– 221939**	**213320– 213361**
	P H M S K	P H M S K	N P H M S K	_ P H M S K	_ P _ M S K	_ P _ M S K	_ P _ M S K	N P _ M S K	N P H M S K
	546 – 548	546 – 548	549 – 552	553 – 554	607	608	609 – 610	605 – 606	575

	End mill									
			Power Tang	**Power Tang**	**Softcut®18**	**Softcut®13**	**Softcut®06**			**MEW**
	Garant HOLEX	HOLEX	Garant	Garant	Garant	Garant	Garant	Garant HOLEX	Garant HOLEX	KYOCERA
	215045 – 215055	**215102**	**215122**	**215950 – 5968**	**215155 – 215160**	**215560 – 215575**	**215605 – 215620**	**215705 – 515715**	**215800 – 215870**	**225200 – 225210**
	25 – 100	50 – 100	40 – 125	20 – 63	25 – 160	14 – 100	10 – 63	25 – 160	10 – 100	16 – 80
	5	4	12	8	9	3.5 – 6	2.5 – 4	7	4.8	10 – 15
	90°	90°	90°	90°	90°	90°	90°	90°	90°	90°
	2 – 8	5 – 8	4 – 15	2 – 9	2 – 10	1 – 12	2 – 12	2 – 10	1 – 12	2 – 6
	Weldon shank / bore	Bore	Bore	Plain shank / Weldon shank / thread / bore	Plain shank / Weldon shank / bore	Plain shank / Weldon shank / thread / bore	Plain shank / Weldon shank / thread / bore	Plain shank / Weldon shank / bore	Weldon shank / thread / bore	Plain shank / bore
	IC	IC	IC	IC	(IC)	IC	IC	(IC)	IC	IC
	SOMT 09T3	XNEX 0806	LO.U 130708	LO.U 090408	AP.T. 1805	AP.T. 1335	AP.T. 0602	AP.. 16	AP.. 10	LO..10 / LO.. 15
	215065 – 215095	**215104 – 215117**	**215131 – 215151**	**215980 – 5996**	**215202 – 215276**	**215302 – 215389**	**215621 – 215692**	**215720 – 215781**	**215880 – 215948**	**225220 – 225240**
	N P _ M S K	N P _ M _ _	_ P _ M S K	_ P _ M S K	N P _ M S K	N P _ M S K	N P _ M S K	N P H M S K	N P _ M S K	_ P _ M S K
	567	568	569	570 – 571	572 – 574	575 – 578	578 – 580	581 – 582	583 – 584	614

Overview – milling cutters range Group 21 / 22

Type	Porcupine mills								
Designation >	MFWN	MECX	MEC11T/MEC17	Power Tang	Softcut®18	Softcut®13	Softcut®06		MEC11/MEC17
Brand	KYOCERA	KYOCERA	KYOCERA	Garant	Garant	Garant	Garant	Garant	KYOCERA
Item number	225600 – 225615	227100 – 227115	227300 – 227515	215972 / 5974 – 215126	215161	215577 – 215579	215622	215840 – 215860	227450 – 227655
Diameter (mm)	50 – 250	8 – 63	16 – 160	25 – 100	50 – 80	20 – 50	16 – 25	20 – 32	25 – 100
$a_{p\,max}$ (mm)	8	6	10 – 15.7	32 – 81	28 – 55	20 – 40	22.5 – 33.5	17 – 38	30 – 74
Approach angle	90°	90°	90°	90°	90°	90°	90°	90°	90°
Number of cutting edges	3 – 18	1 – 14	2 – 14	2 – 6	3 – 6	2 – 5	2 – 5	2 – 3	2 – 6
Interface	Plain shank / bore	Plain shank / Weldon shank / bore	Plain shank / Weldon shank / thread / bore	Weldon shank / thread / bore	Bore	Weldon shank / bore	Weldon shank	Weldon shank	Plain shank / Weldon shank / bore
Cooling channels IC	IC	IC	IC	IC	IC	IC	IC	IC	IC
Suitable insert									
Insert type / ISO	WNMU 0806	BDMT 0703	BD.T 1	LO.U 0904 / LO.U 1307	AP.T. 1805	AP.T. 1335	AP.T. 0602	AP.. 1003	BDMT 1.
Item number	225620 – 225630	227135 – 227157	227325 – 227567	215980 – 5996 / 215131 – 5151	215202 – 215276	215302 – 215389	215623 – 215692	215880 – 215948	227470 – 227681
Further application									
ISO – code	_P_MSK	_P_M_K	NP_MSK	_P_MSK	NP_MSK	NP_MSK	NP_M_K	NP_MSK	_P___K
Page	615	616	617 – 619	569 / 571	573 – 574	576 – 578	579 – 580	584	620

Type	Chamfer mill					Engraving / deburring	Circular mill	Side milling and grooving cutters			
Designation >	Softcut®	Softcut®18	Softcut®13								
Brand	Garant	Garant	Garant	Garant	Garant HOLEX	Garant	Garant	Garant	Garant	Garant	mimatic
Item number	214911	215152	215540	215700/ 215795	216100 – 216635	217202 – 217225	217250 – 217405	218300	218408 – 218444	218540 – 218569	218205 – 218210
Diameter (mm)	16 – 25	35 – 92	17 – 75	17 – 94	2 – 33.5	6 – 10	7.9 – 23	21 – 50	50 – 160	50 – 160	32 – 80
$a_{p\,max}$ (mm)									1.5 – 3.1	4 – 16	1 – 5
Approach angle	45°	15° – 75°	15° – 75°	15° – 75°	30° – 60°						
Number of cutting edges	3 – 5	3	3	3	1 – 6	1 – 6	3 – 6	1 – 2	4 – 15	2 – 8	16 – 40
Interface	Weldon shank	Bore	Bore	Bore	Weldon shank / plain shank/ thread	Plain shank	Plain shank / Weldon shank / thread	Weldon shank	Parallel shank / Thread/ bore	Thread/ bore	Weldon shank / bore
Cooling channels IC	IC	IC	IC	IC	(IC)		IC	IC			IC
Suitable insert											
Insert type / ISO	SO.T 0836	AP.T. 1805	AP.T. 1335	AP.. 10/AP.. 16	TO../TC../SD../ SC..	Special		SPMT	Special	SNHX	
Item number	214914 – 214956	215202 – 215276	215302 – 215389	215720 – 215882	216408 – 216770	217210 – 217228	217255 – 217510	218305 – 218360	218450 – 218470	218571 – 218621	218220 – 218236
Further application											
ISO – code	NP_M_K	NP_MSK	NP_MSK	NPHMSK	NP_MSK	NP_M_K	NPHMSK	NP_M_K	NP_M_K	NP_M_K	NP_M_K
Page	565 – 566	572 – 574	575/577 – 578	581 / 583	585 – 589	590	591 – 596	598	599 – 600	601 – 602	597

Carbide coated	Grade description	P (steel)					M (Inox)				K GG(G)				N (Alu)		S (Ti)		H (HRC)		
		P01	P10	P20	P30	P40	M10	M20	M30	M40	K01	K10	K20	K30	(Alu)	(Alu)	(Ti)	(Ti)	< 55	< 60	< 67
	Highly wear-resistant grade for machining unalloyed tool steels and high-tensile materials up to 56 HRC		HB 4015				HB 4015					HB 4015									
	Suitable for machining low-tensile steels. PVD coated.		HB 4020																		
	Outstandingly suitable for high-alloy tool steels. Ultra-fine grain grade with multi-layer coating.			HB 4030																	
	Extremely wear-resistant grade with AlTiCrN coating for hard machining.										HB 4715								HB 4715		
	Tool material with AlTiCrN multi-layer PVD coating, developed for use on stainless steels.								HB 4130												
	High-performance tool material for machining Inconel and heat resistant superalloys (HRSA). Multi-layer PVD coating.																HB 4420				
	Tool material for machining titanium. Multi-layer PVD coating.																HB 4430				
	Wide-range grade. General-purpose tool material.		HB 415				HB 415														
	High wear resistance grade for HARD machining up to 60 HRC.	HB 7210																	HB 7210		
	Highly wear-resistant grade for hard machining up to 60 HRC. TiC / TiN-CVD multi-layer coating.	HB 7505									HB 7505								HB 7505		
	Wear-resistant grade for high-speed machining in steel.	HB 7510 HB 7510																			
	Machining of heat-treatable and tool steels, and also cast iron. Ti(C, N)+Al_2O_3.		HB 7515									HB 7515									
	Micro-grain grade with TiC / TiN and nano-layer coating.		HB 7520 HB 7520				HB 7520 HB 7520														
	Grade for wet and dry machining and high cutting speeds. TiC / TiN-CVD multi-layer coating or Ti(C, N)+Al_2O_3 coating. For NC spotting drills with TiCN coating.		HB 7525 HB 7525 HB 7525				HB 7525 HB 7525 HB 7525														
	Wide-range grade for machining steel. Especially suitable for low tensile strength steels. Tough substrate means low susceptibility to fracture.			HB 7530																	
	Ideal for use in difficult conditions and on stainless steels. (P30/40) (M20/35) micro–grain grade with TiAlN/TiN–PVD multi–layer coating.				HB 7535 HB 7535			HB 7535 HB 7535									HB 7535 HB 7535				
	Micro-crystalline grade with balanced basic toughness and nano-layer coating.							HB 7630													
	Tough carbide with CVD multi-layer coating especially for stainless steels. For 45° chamfer mills, with PVD coating.							HB 7635 HB 7635													
	Highly wear-resistant grade for hard machining up to 60 HRC. TiC / TiN-CVD multi-layer coating.										HB 7705								HB 7705		
	Wear-resistant grade for machining cast iron. (P10) (K10/20) carbide with TiAlN-CVD coating.	HB 7710										HB 7710									
	Wear-resistant grade for high alloy tool steels, cast iron, and nickel alloys.		HB 7720									HB 7720									
	(P20/30) (K20/30) Grades for high cutting speeds. Ideal for dry machining. Specially suited for hard machining, mounted on TopCut indexable face mills.			HB 7730									HB 7730								
	Machining of low tensile strength materials. (P30/40) (M20) carbide with TiAlN-CVD coating.				HB 7735		HB 7735										HB 7735				
	Specially for machining aluminium at high cutting speeds.														HB 7805						
	Nano-crystalline high performance coating for aluminium, aluminium alloys and composite materials. Some are diamond-coated.														HB 7810						
	Micro-grain carbide (K20). TiB2 coating for TopCut indexable face mills.														HB 7820						
	Wear-resistant grade for machining titanium and cast iron.												HB 7930				HB 7930				
	Micro-grain grade with high toughness. Suitable for machining stainless steels and materials that are difficult to machine.																HB 7935				
	Exceptionally wear-resistant grade, PVD-coated.																HB 7940				
	Micrograin grade with multi-layer PVD coating for exceptionally long service life, especially on steel materials.		HB 8520				HB 8520														
	Micro-grain structure with TiAlN, PVD multi-layer coating.			HB 8525				HB 8525													
	Micro-crystalline carbide with multi-layer coating for wet machining of stainless steels.							HB 8630													
	Wear-resistant PVD-coated tool material grade for machining steels.			HB 9520																	
	Fine-grain substrate for machining steel with CVD-Al_2O_3 coating. Suitable to a limited extent for machining stainless steels.		HB 9525				HB 9525														
	Versatile tool material for a nano-PVD coating. Suitable for unstable machining conditions.		HB 9530					HB 9530					HB 9530								
	For machining steels of low to medium tensile strength. PVD-coated carbide grade.			HB 9535																	
	Carbide grade with fine grain size and PVD multi-layer coating for use on steels.			HB 9540																	

Garant KENNAMETAL Milling / tool materials

	Grade description	P (steel) P01	P10	P20	P30	P40	M (Inox) M10	M20	M30	M40	K GG(G) K01	K10	K20	K30	N (Alu) (Alu)	(Alu)	S (Ti) (Ti)	(Ti)	H (HRC) < 55	< 60	< 67
Coated carbide	Carbide grade with high cobalt binding phase proportion and a PVD-TiAlN coating for machining stainless steels.							HB 9635													
	Tool material for general use, very tough. Substrate with thin CVD-Al_2O_3coating.			HB 9640				HB 9640					HB 9640				HB 9640				
	Tool grade with PVD multi-layer coating, developed for use on stainless steels. Suitable for unstable machining conditions.				HB 9645			HB 9645									HB 9645				
	Extremely wear-resistant grade for machining cast iron.										HB 9710										
	Tool material grade with PVD, TiAlN and TiAlSiN coatings, with high abrasion resistance and relatively low cobalt content for use under stable machining conditions.											HB 9715							HB 9715		
	CVD coated carbide grade with Ti(C,N) and Al_2O_3 coating layers. Specially developed for machining cast iron.											HB 9720									
	Micro-grain structure with TiAlN, PVD multi-layer coating. Suitable for superalloys such as Inconel 718.		HB 720					HB 720					HB 720				HB 720		HB 720		
	Micro-grain solid carbide with AlCrN coating for general-purpose use.			HB 730				HB 730					HB 730		HB 730		HB 730				
	All-round grade for wet and dry machining in steel and stainless steel, also cast iron.			HB 735				HB 735					HB 735				HB 735				
	Tough grade for general machining.				HB 740				HB 740				HB 740				HB 740				
	Tool material grade with PVD-TiAlN coating. Suitable for use across a wide range of materials.		HB 925					HB 925			HB 925										
Carbide uncoated	Especially for aluminium, non-ferrous metals and plastics, often in highly polished versions (K10/20).														HU 7710						
	Extremely wear-resistant grade for aluminium.														HU 7805						
	K10 fine grain. High wear resistance grade for aluminium, aluminium alloys and non-ferrous metals.														HU 7810						
	Uncoated polished tool material type for machining non-ferrous metals.														HU 7815						
	Grade for machining non-ferrous metals including titanium.														HU 7830		HU 7830				
	Uncoated carbide grade for machining non-ferrous metals.														HU 9815						
	Micro-grain solid carbide for machining aluminium.														HU 730						
Cermet	Uncoated. For high surface qualities in steel materials.			CU 7530																	
	Uncoated. Very tough and highly wear-resistant Cermet for dry machining at low cutting depths.	CU 7725						CU 7725													
CBN	Wear-resistant CBN grade. Particle size 2 µm. General-purpose use with very high toughness.																		CBN 725		
CERAMIC	Uncoated Sialon ceramic for machining castings at high cutting speeds.											KU 7710									
PCD	Suitable for both non-ferrous metals and also non-metallic materials. For uninterrupted cutting, high cutting speeds and low feed rates. Particle size 5 µm.														PCD						
KENNAMETAL																					
Coated carbide	Wear-resistant grade for cast iron. TiN-TiCN-Al_2O_3-CVD multi-layered coating.											SC3025									
	Wear-resistant grade for steel at high cutting speeds and feed rates. TiN-TiCN-Al_2O_3.		SC6525																		
	High wear resistance coupled with high toughness. Nano-structured TiAlN-PVD coating.		SP6519					SP6519					SP6519				SP6519				
	Medium machining under stable conditions. TiN-TiCN-Al_2O_3CVD multi-layer coating.		MP91M					MP91M					MP91M						MP91M		
	Machining with a heavily interrupted cut. For use in alloyed, tool and high-temperature steels. TiAlN-PVD coating.			X400															X400		
	High performance grade with exceptionally high toughness. For machining alloy steels, stainless steels, and high-temperature steels. TiN-TiC-TiN-CVD multi-layer coating.				X500			X500					X500					X500			
Carbide uncoated	Uncoated micro-grain grade with high wear resistance for aluminium and non-ferrous metals. Also for roughing and finish machining of cast iron and heat-resistant alloys.											GH 1			GH 1		GH 1				
	Uncoated micro-grain grade for applications in aluminium and cast iron.											GH 2			GH 2						

KYOCERA mimatic HOLEX Milling / tool materials

Grade description	P (steel)					M (Inox)				K GG(G)				N (Alu)		S (Ti)		H (HRC)		
	P01	P10	P20	P30	P40	M10	M20	M30	M40	K01	K10	K20	K30	(Alu)	(Alu)	(Ti)	(Ti)	< 55	< 60	< 67
KYOCERA																				
Carbide coated: **Megacoat** coating (PVD) and substrate for machining cast iron.											PR1210						PR1210			
Carbide coated: **Megacoat** coating (PVD) on a fine-grain substrate. For general-purpose applications in steel and stainless steels.		PR1225					PR1225													
Carbide coated: **Megacoat** multilayer coating (PVD) and substrate for machining cast iron.											PR1510						PR1510			
Carbide coated: **Megacoat** multi-layer coating (PVD) on a fine-grain substrate. First choice for general-purpose applications in steel and stainless steels.		PR1525					PR1525													
Carbide coated: **Megacoat** multilayer coating (PVD) on a fine-grain substrate. First choice for stainless steels and titanium alloys.								PR1535									PR1535			
Carbide coated: α-Al_2O_3 coating CCRD, as first choice for Ni-based heat resistant alloys and martensitic stainless steels.								CA6535									CA6535			
Carbide coated: CVD-coated substrate of very high toughness for high protection against wear when machining cast iron.												CA420M								
Carbide uncoated: Uncoated wear-resistant micro-grain grade for machining aluminium. High hardness and toughness.															GW 25					
Cermet: Tough Cermet with high resistance to oxidation and thermal shock. For productive applications in steel.	TN 100M						TN 100M													
mimatic																				
Carbide: Wear-resistant micro-grain carbide with Tinamatic coating		TiAlN					TiAlN				TiAlN				TiAlN					
HOLEX																				
Carbide coated: Optimised wide-range grade for machining steel. CVD coating.		HBM015																		
Carbide coated: Special carbide grade for machining stainless steels. Ideal for use under difficult machine conditions.							HBM130													
Carbide coated: General-purpose CVD-coated multi-range grade.		HBM20					HBM20													
Carbide coated: PVD-coated multi-range grade for a wide range of applications		HBX20					HBX20				HBX20									
Carbide uncoated: Uncoated highly wear-resistant tool material type for machining non-ferrous metals.															HUM310					

ToolScout for modular machining

Milling:

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	Uni	Cutting oil	Emulsion	Minimum lubrication	Dry machining	Compressed air
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	K						
21 4865				320	300	260													○			●	

Assignment of the ISO code

Complete ISO code

v_c = 260 m/min
Medium cutting speed
as recommended application value
e.g. for
steels ≤ 900 N/mm².

ST900 = suitable for steel up to 900 N/mm².

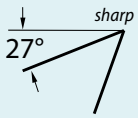
● / Bold script = highly suitable;
○ / Normal script = suitable only under restricted conditions

f_z = 0.2 mm
Average feed rate **as recommended application value.**
Inserts **suitable** for steel.

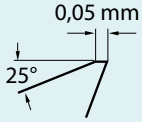
Type			ALU	ST500	ST900	ST1400	INOX	GGG	UNI	
21A 21 4865	SOMT 120508 PDER	HB7520	–	–	–	–	–	–	–	10
f_z		mm	0.2	0.2	0.2	0.22	0.17	0.2	–	

Cutting edge version

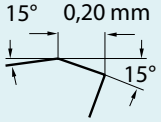
Sharp cutting edges:
■ for easy to machine materials



Lightly chamfered edge:
■ for more wear-resistant materials



Negative chamfered edge:
■ for materials with higher tensile strength



GARANT POWER CARD

Maximum productivity with no risk!
Your "comprehensive insurance".
This is how easy it is:

Send the defective face mill with the POWER CARD. . .

. . . to us.
You will receive free of charge. . .

. . . a new GARANT face mill of the same type.

POWER CARD Garant

GARANT face mills where this pictogram is shown are delivered with a free POWER CARD.
Valid for 1 year from date of purchase.

Overview – ISO indexable milling inserts

Shape	Clearance angle	ISO	Insert size	Garant	KYOCERA	KENNAMETAL	HOLEX
				Page			
A . . Rhomboid 85°	AN . . 0°	ANGT	10 / 16	603			
		ANKU	12	603			
	AP . . 11°	APET	13 / 18	574–575 / 577			
		APEX	16	582			
		APFT	16	582			
		APGT	10 / 16	584 / 582			
		APHT	06 / 10 / 13 / 16	577 / 584		582	
		APKT	10 / 16	582		582	582 / 584
		APKX	16	582			
		APMT	06 / 10 / 13 / 18	577 / 578 / 580 / 582 / 584			
		APMX	16	582			
		APXT	16	582			
B . . Rhomboid 82°	BD . . 15°	BDGT	11 / 17		610		
		BDMT	07 / 11 / 17		616 / 619–621		
	BG . . 30°	BGHX	15	562			
C . . Rhombus 80°	CP . . 11°	CPHX	06	540			
		CPHX	09	540			
L . . Orthogon 90°	LO . . special	LOEU	09 / 13	571			
		LOMU	09 / 10 / 13 / 15	569	614		
		LOGU	03		608		
	LP . . 11°	LPGT	01		607		
M . . Rhombus 86°	MP . . 11°	MPHX	06 / 11	603			
O . . Octagon 135°	ON . . 0°	ONEU	05	557			
		ONMU	05	557			
	OF . . 25°	OFEW	05	555			
		OFMT	05	555			
P . . Pentagon 108°	PN . . 0°	PN.U	12		611		
		PN..	11		612		
	PO . . special	POMX	07 / 10	554 / 553			
R . . Round	RD . . 15°	RDHT	05 – 16	537–538			
		RDHW	05 – 16	537–538			
		RDHX	05 – 16	537–538			
		RDMT	10 / 12	538			
		RDMW	12 / 16	538			
		RDNX	07 / 10 / 12 / 16	537–538			
S . . Square 90°	SN . . 0°	SNEU	14	557			
		SNHX	11 / 12	602			
		SNMU	14	557			
	SC . . 7°	SCLT	05	586			
	SP . . 11°	SPGT	06 / 09 / 12	598			
		SPKN	12	603			
		SPLR	12	603			
		SPMT	06 / 09 / 12 / 18	598	613		
		SPUN	12	603			

Shape	Clearance angle	ISO	Insert size	Garant	KYOCERA	KENNAMETAL	KOMET	HOLEX
				Page				
	SD . . 15°	SDGT	09	585				
		SDHT	09	561				
		SDHW	09	561				
		SDHX	09	561				
		SDLT	09	585				
		SDMX	09	561				
	SE . . 20°	SECN	12	559				
		SEEN	12	559				
		SEET	12 / 13	560 / 558				
		SEHT	12	560				
		SEHW	12	560				
		SEKA	12	560				
		SEKN	12	559				
		SEKR	12	559				
		SEKT	12	560				
		SEKW	12	560				
		SEMT	13	558				
	SO . . special	SOET	08 / 12	566 / 564				
		SOMT	08 / 09 / 12 / 10 / 14	564–567	610			567
T . . Triangle 60°	TO . . special	TOHT	16				587	
		TOHX	09 / 14				587	
V . . Rhombus 35°	VC . . 7°	VCGT	22	532				
		VCGX	22	532				
		VDGT	11	533				
W . . Trigon 80°	WN . . 15°	WNEU	08		615			
		WNMU	08		615			
Z . . Special shape	ZD . . 0°	ZDET	16			604		
X . . Special shape	XN . . 0°	XNEU	05 / 14	557				
	XP . . 15°	XPLT	06			606		
	XD . . 11°	XDHW	06 / 10	603				
		XD.T	07 / 09 / 12	551–552		606		
		XDLW	07 / 09 / 12	551–552		606		
		XDMT	09 / 12	545				
		XDMW	09 / 12	545				
		XDPW	07 / 09 / 12	551–552				
	XE . . 15°	XEEW	13	558				
		XELT	16			606		
		XELW	16			606		
		XNEX	08					568
	XO . . special	XOEW	08 / 12	566 / 564				
		XOMT	06	545				
		XOMU	09	548				
	X . . 20°	XOMU	14	548				
		XOMW	06	545				
		Copy	08 – 32	541–542				
		Polygon	Type P12 / P16 / P26	591–594				
		3-square	Type 1 / 2 / 3 / 4	595–596				
		Cutting	a_p = 1.0 – 5.0	597 / 600–602				

Solid carbide | Standard | Type W | HPC

Garant

TopCut interchangeable head milling cutter system – milling heads for aluminium machining

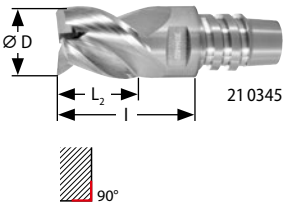
Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	CuZn	Graphite GRP CRP					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	N	N					
HB7820	580	550	400														350			●	○		○
HU730	530	500	450														320		○	●	○	○	○

Solid carbide milling head HPC, polished flutes

3 | 42° | a_e 0.3×D

Note: Standard application values for slots milled from solid at $a_{p\,max} \leq 0.5 \times D$.

∅ D h10	21M 21 0345	21M 21 0350	l	L_2	45° / 21 0350	Alu f_z	Alu f_z
	Milling head, sharp-edged	Milling head, 45° chamfer					
	HPC						
mm	HU730	HU730	mm	mm	mm	mm	mm
10	XXX	XXX	18	10	0.2	0.09	0.12
12	XXX	XXX	22	12	0.24	0.11	0.13
16	XXX	XXX	28	16	0.32	0.14	0.17
20	XXX	XXX	35	20	0.4	0.18	0.22
25	XXX	XXX	45	25	0.5	0.22	0.28

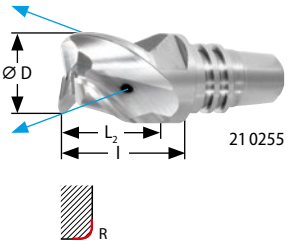


Solid carbide torus milling head HPC

3 | 42°

Note: Standard application values for slots milled from solid at $a_{p\,max} \leq 0.5 \times D$.

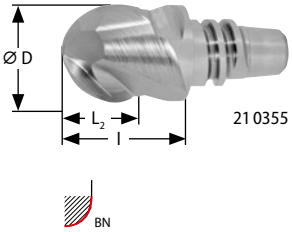
∅ D h10 / R	21M 21 0255	l	L_2	R	Alu f_z	Alu f_z
	Torus milling head					
	HPC					
mm	HB7820	mm	mm	mm	mm	mm
10/0,5	XXX	13	7.5	0.5	0.09	0.12
10/1	XXX	13	7.5	1	0.09	0.12
12/0,5	XXX	16	9	0.5	0.11	0.13
12/1	XXX	16	9	1	0.11	0.13
12/2	XXX	16	9	2	0.11	0.13
16/2	XXX	20	12	2	0.14	0.17
16/4	XXX	20	12	4	0.14	0.17
20/2	XXX	25	15	2	0.18	0.22
20/4	XXX	25	15	4	0.18	0.22
25/2	XXX	32	19	2	0.22	0.28
25/4	XXX	32	19	4	0.22	0.28



Solid carbide copy milling heads HPC

2 | 45° | a_e 0.1×D

∅ D h10	21M 21 0355	l	L_2	$a_{p\,max}$	Alu f_z
	Copy milling head				
	HPC				
mm	HU730	mm	mm	mm	mm
10	XXX	13	7.5	5	0.08
12	XXX	16	9	6	0.1
16	XXX	20	12	8	0.13
20	XXX	25	15	10	0.16
25	XXX	32	19	12.5	0.18



Solid carbide | Standard | Type N

GARANT

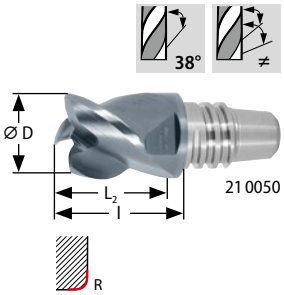
TopCut interchangeable head milling cutter system - milling heads for steel processing

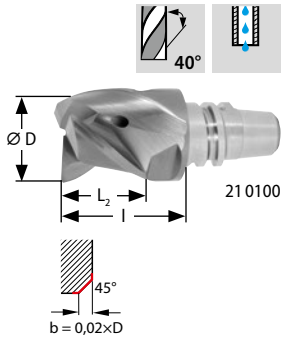
Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	Graphite GRP CRP
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	K	N
HB730				210	170	150	130	110	50	40				80	50	80	160	

Solid carbide roughing milling heads HPC

3 | ≠ | | | a_e 0.3×D | HPC

Note: Standard application values for $a_{p\,max} \leq 0.5 \times D$.



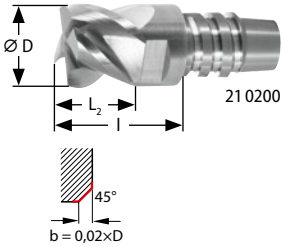


Ø D h10	21M 21 0050 PickPocket end milling head	21M 21 0100 End milling head, 45° chamfer with IC	l	L_2	R	45°	f_z < 900 N		f_z < 900 N	
					21 0050	21 0100	21 0050	21 0100	21 0050	21 0100
mm	HB730	HB730	mm	mm	mm	mm	mm	mm	mm	mm
9,7	XXX	–	13	7.5	0.32	–	0.06	–	0.08	–
10	XXX	XXX	13	7.5	0.32	0.2	0.06	0.04	0.08	0.06
11,7	XXX	–	16	9	0.32	–	0.07	–	0.09	–
12	XXX	XXX	16	9	0.32	0.24	0.07	0.05	0.09	0.07
15,7	XXX	–	20	12	0.32	–	0.08	–	0.1	–
16	XXX	XXX	20	12	0.32	0.32	0.08	0.06	0.1	0.08
19,7	XXX	–	25	15	0.5	–	0.1	–	0.13	–
20	XXX	XXX	25	15	0.5	0.4	0.1	0.08	0.13	0.1
24,7	XXX	–	32	19	0.5	–	0.11	–	0.15	–
25	XXX	XXX	32	19	0.5	0.5	0.11	0.09	0.15	0.12

Solid carbide milling head

4 | 40° | | | a_e 0.3×D

Note: Standard application values for $a_{p\,max} \leq 0.5 \times D$.

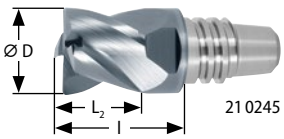


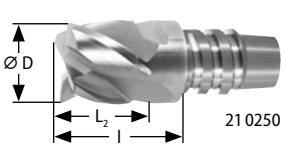
Ø D h10	21M 21 0200 End milling head, 45° chamfer	21M 21 0210 End milling head, radius = 0.5 mm	21M 21 0230 End milling head, radius = 1.0 mm	l	L_2	45°	f_z < 900 N	f_z < 900 N
						21 0200		
mm	HB730	HB730	HB730	mm	mm	mm	mm	mm
10	XXX	XXX	XXX	13	7.5	0.2	0.02	0.04
12	XXX	XXX	XXX	16	9	0.24	0.04	0.06
16	XXX	XXX	XXX	20	12	0.32	0.05	0.07
20	XXX	XXX	XXX	25	15	0.4	0.07	0.09
25	XXX	XXX	XXX	32	19	0.5	0.09	0.11

Solid carbide roughing milling heads

4 | 38° | | | a_e 0.3×D | HPC

Note: Standard application values for $a_{p\,max} \leq 0.5 \times D$.





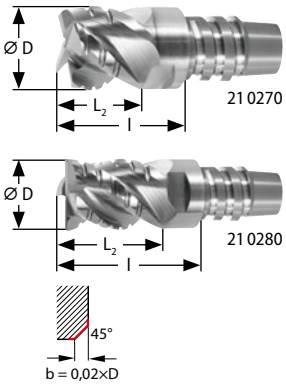
Ø D h10	21M 21 0245 GARANT Master Steel end milling head, 45° chamfer	21M 21 0250 End milling head, 45° chamfer	l	L_2	45°	f_z < 900 N		f_z < 900 N	
						21 0245	21 0250	21 0245	21 0250
mm	HB730	HB730	mm	mm	mm	mm	mm	mm	mm
10	XXX	XXX	13	7.5	0.2	0.06	0.04	0.08	0.06
12	XXX	XXX	16	9	0.24	0.07	0.05	0.09	0.07
16	XXX	XXX	20	12	0.32	0.08	0.06	0.1	0.08
20	XXX	XXX	25	15	0.4	0.1	0.08	0.12	0.1
25	XXX	XXX	32	19	0.5	0.12	0.1	0.14	0.12

Solid carbide roughing / finishing milling heads HPC

NF | 4 | 45° | a_e 0.3×D | HPC

Note: Standard application values for $a_{p\,max} \leq 0.5 \times D$.

Ø D h10	21M 21 0270	21M 21 0280	l		L_2		45°	f_z < 900 N		f_z < 900 N	
	Roughing / finishing milling head, 45° chamfer		21 0270	21 0280	21 0270	21 0280		21 0270	21 0280	21 0270	21 0280
mm	HB730	HB730	mm	mm	mm	mm	mm	mm	mm	mm	mm
10	XXX	XXX	13	18	7.5	12.5	0.2	0.04	0.03	0.06	0.05
12	XXX	XXX	16	22	9	15	0.24	0.06	0.05	0.08	0.07
16	XXX	XXX	20	28	12	20	0.32	0.08	0.06	0.1	0.08
20	XXX	XXX	25	35	15	25	0.4	0.1	0.08	0.12	0.1
25	XXX	XXX	32	45	19	32	0.5	0.12	0.1	0.14	0.1

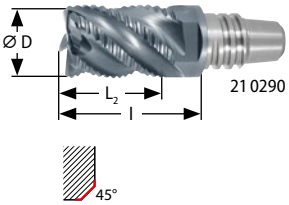


Solid carbide roughing / finishing milling head

NR | 5 | 42° | a_e 0.3×D

Note: Standard application values for $a_{p\,max} \leq 0.75 \times D$.

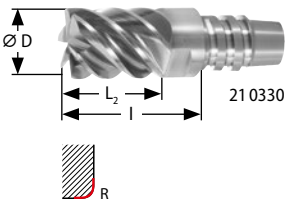
Ø D d11	21M 21 0290	l	L_2	45°	f_z < 900 N	f_z < 900 N
	GARANT Master Steel SlotMachine solid carbide roughing milling head					
mm	HB730	mm	mm	mm	mm	mm
10	XXX	18	12.5	0.5	0.065	0.09
12	XXX	22	15	0.6	0.065	0.09
16	XXX	28	20	0.8	0.07	0.1
20	XXX	35	25	1	0.09	0.13
25	XXX	45	32	1.25	0.11	0.15



Solid carbide finish milling heads HPC

6 | 50° | a_e 0.1×D | HPC

Ø D h10	21M 21 0330	21M 21 0340	l	L_2	R	45°	f_z < 900 N
	Finish milling head, radius	Finish milling head, 45° chamfer			21 0330	21 0340	
mm	HB730	HB730	mm	mm	mm	mm	mm
10	XXX	XXX	18	12.5	0.5	0.2	0.05
12	XXX	XXX	22	15	0.6	0.24	0.06
16	XXX	XXX	28	20	0.8	0.32	0.08
20	XXX	XXX	35	25	1	0.4	0.1
25	XXX	XXX	45	32	1.25	0.5	0.12



Solid carbide TPC milling heads with chip separators

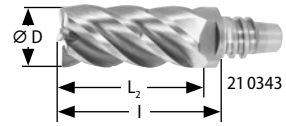
5 | 45° | ≠ | TPC

Milling head specially designed for TPC applications.

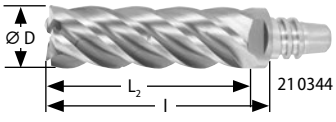
Note: h_{max}: The values stated in the table are maximum values.
Cutting data for conventional milling can be found in the machining handbook No. 110020.
21 0343 – $a_{e\,max} = 0.1 \times D$ for TPC machining.
21 0344 – $a_{e\,max} = 0.08 \times D$ for TPC machining.

Ø D f8	21M 21 0343	21M 21 0344	l		L_2		45°	TPC < 900 N h_{max}
	TPC milling head with chip separators 2×D	TPC milling head with chip separators 3×D	21 0343	21 0344	21 0343	21 0344		
mm	HB730	HB730	mm	mm	mm	mm	mm	mm
10	XXX	XXX	25.5	35.5	20	30	0.2	0.045
12	XXX	XXX	31	43	24	36	0.24	0.045
16	XXX	XXX	40	56	32	48	0.32	0.06
20	XXX	XXX	50	70	40	60	0.4	0.075
25	XXX	–	62	–	50	–	0.5	0.085

TPC $a_{e\,max}$ 0.1×D



TPC $a_{e\,max}$ 0.08×D



Solid carbide | Standard

Garant

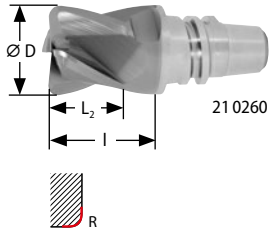
TopCut interchangeable head milling cutter system - milling heads for general-purpose machining, special milling heads

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	CuZn
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	K	N
HB730				210	170	150	130	110	50	40				80	50	80	160	
HB7730								130	65	55								
HB740	80	80	60	65	60	50	40	10	12					25	20	15	35	70

Solid carbide torus head HPC

Type N | 4 | 30° | a_e 0.3×D | HPC

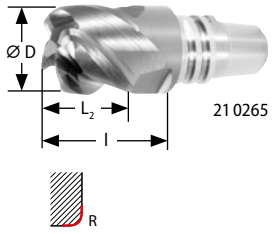
Note: Standard application values for slots milled from solid at $a_{p\,max} \leq 0.5 \times D$.



Ø D h10 / R	21M 21 0260 Torus milling head	l	L_2	R	< 900 N f_z	< 900 N f_z
mm	HB730	mm	mm	mm	mm	mm
10/2	XXX	13	7.5	2	0.04	0.06
10/3	XXX	13	7.5	3	0.04	0.06
12/2	XXX	16	9	2	0.06	0.08
12/3	XXX	16	9	3	0.06	0.08
16/2	XXX	20	12	2	0.07	0.1
16/4	XXX	20	12	4	0.07	0.1
20/2	XXX	25	15	2	0.1	0.12
20/4	XXX	25	15	4	0.1	0.12
25/3	XXX	32	19	3	0.11	0.14
25/6	XXX	32	19	6	0.11	0.14

Solid carbide torus milling heads HPC for hard machining

Type H | 4 | 45° | a_e 0.05×D | a_e 0.3×D | HPC

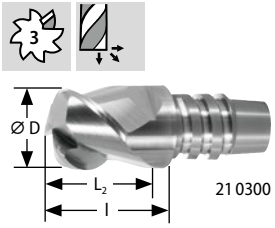


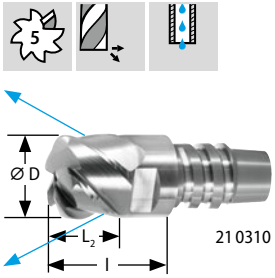
Ø D h10 / R	21M 21 0265 Torus milling head, hard machining	l	L_2	R	< 55 HRC h_{max}
mm	HB7730	mm	mm	mm	mm
10/0,5	XXX	13	7.5	0.5	0.04
10/1	XXX	13	7.5	1	0.04
10/2	XXX	13	7.5	2	0.04
12/0,5	XXX	16	9	0.5	0.05
12/1	XXX	16	9	1	0.05
12/2	XXX	16	9	2	0.05
16/1	XXX	20	12	1	0.06
16/2	XXX	20	12	2	0.06
20/2	XXX	25	15	2	0.08
25/2	XXX	32	19	2	0.1

Solid carbide face torus milling heads HPC

Type N | 45° | HPC

Note: **Comply strictly with $a_{p\,max}$! Recommended application values (v_c and f_z)** apply also to $a_{p\,max}$.

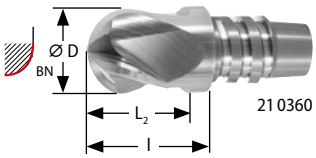




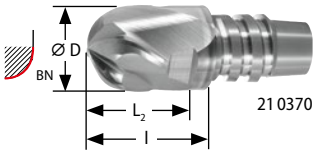
Ø D h10	21M 21 0300 Face torus milling head	21M 21 0310 Face torus milling head, with internal coolant supply	l	L_2	Programming radius R_p	$a_{p\,max}$ in steel < 900 N/mm²	< 900 N f_z
mm	HB730	HB730	mm	mm	mm	mm	mm
10	XXX	XXX	13	7.5	1.838	0.5	0.4
12	XXX	XXX	16	9	2.205	0.6	0.6
16	XXX	XXX	20	12	2.94	0.8	0.8
20	XXX	XXX	25	15	3.675	1	1.1
25	XXX	XXX	32	19	4.594	1.25	1.3

Solid carbide copy milling heads

HPC | Type N | 30°



Type H | 15°

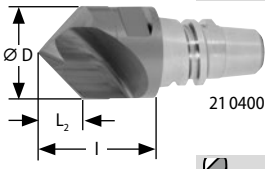


Ø D h10	21M 21 0360	21M 21 0370	l	L_2	$a_{p\,max}$ in steel < 900 N/mm²	$a_{p\,max}$ in steel < 60 HRC	< 900 N f_z	< 60 HRC f_z
	Copy milling head	Copy milling head, hard machining			21 0360	21 0370	21 0360	21 0370
mm	HB730	HB7730	mm	mm	mm	mm	mm	mm
10	XXX	XXX	13	7.5	3	0.3	0.06	0.04
12	XXX	XXX	16	9	3.6	0.4	0.08	0.05
16	XXX	XXX	20	12	4.8	0.5	0.1	0.06
20	XXX	XXX	25	15	6	0.6	0.12	0.08
25	XXX	XXX	32	19	7.5	0.75	0.14	0.1

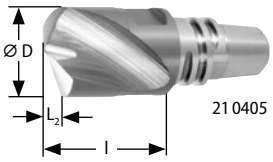
Solid carbide milling heads NC spotting drill

Type N | 2

90°



142°



Ø D ± 0.01	21M 21 0400	21M 21 0405	l	L_2	< 900 N f
	NC spotting drill 90°	NC spotting drill 142°		21 0400	
mm	HB730	HB730	mm	mm	mm/rev.
10	XXX	XXX	13	5	0.12
12	XXX	XXX	16	6	0.16
16	XXX	XXX	20	8	0.2
20	XXX	XXX	25	10	0.24

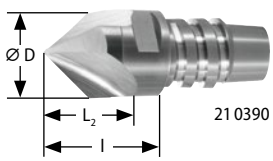
Solid carbide milling heads, countersinks with irregular spacing

90° | ≠ | 3

Ø D	21M 21 0410	Arbor size	for DIN cylinder head screws	smallest countersink Ø for holes from	l	< 900 N f
	Countersink					
mm	HB740	mm		mm	mm	mm/rev.
6,3	XXX	10	M3	1.5	16	0.04
10,4	XXX	10	M5	2.5	16	0.05
16,5	XXX	12	M8	3.2	22	0.08
20,5	XXX	16	M10	3.5	28	0.1
25	XXX	16	M12	3.8	28	0.12

Solid carbide milling heads for chamfering

90° | Type N | 3

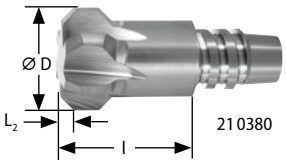


Ø D ± 0.01	21M 21 0390	Arbor size	l	L_2	$a_{p\,max}$ in steel < 900 N/mm²	< 900 N f_z
	Chamfering milling head, 90°					
mm	HB730	mm	mm	mm	mm	mm
10	XXX	10	13	7.5	3	0.06
12	XXX	12	16	9	4	0.08
16	XXX	16	20	12	6	0.1
20	XXX	20	25	15	8	0.12

Solid carbide milling head for front and back chamfering

90° | Type N | 6

Note: $a_{e\,max} = a_{p\,max}$



Ø D ± 0.01	21M 21 0380	Arbor size	l	L_2	$a_{p\,max}$ in steel < 900 N/mm²	< 900 N f_z	suitable clamping wrench 219987 / 219986
	Milling head for front and back chamfering, 90°						
mm	HB730	mm	mm	mm	mm	mm	
12	XXX	10	13	1.4	0.9	0.08	8×3
16	XXX	12	16	2	1.8	0.1	10×4
20	XXX	16	20	2.5	1.8	0.12	13×4

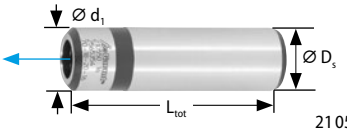
TopCut interchangeable head milling system – Arbors

Precision-ground arbor for GARANT TopCut screw-in heads.
System radial run-out ≤ 10 µm due to the combination of taper and flat face.

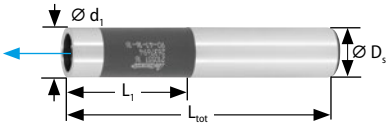
Note:	**Maximum milled depth** = L_1 + l; l = see dimensions of the screw-in heads: No. 210050 – 210410. Assembly wrench = No. 219987. Plug-in adapter for torque wrench = No. 219986. For long tool overhang, reduce technology data.

Arbor

21 0551 – With solid carbide core, without clamping flat.
21 0550/0561/0562/0569/0570 – With plain shank (for HSC machining). **Tolerance = h6.**

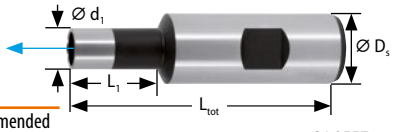


21 0550



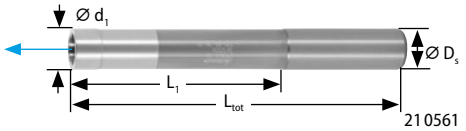
21 0551

for cutter head Ø D	21Z	21 0550	21Z	21 0551	Ø D_s h6		Ø d_1	L_{tot}		L_1	recommended tightening torque
		Parallel arbor		Parallel arbor vibration damped	21 0550	21 0551		21 0550	21 0551	21 0551	
mm		Plain shank			mm	mm	mm	mm	mm	mm	N·m
10		XXX		XXX	16	10	9.8	65	70	30	5
12		XXX		XXX	16	12	11.8	65	70	25	10
16		XXX		XXX	20	16	15.8	70	90	42	15
20		XXX		XXX	25	20	19.8	70	90	40	25
25		XXX		XXX	25	25	24.8	70	120	63	35

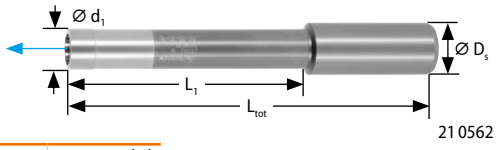


21 0557

for cutter head Ø D	21Z	21 0555	21Z	21 0557	Ø D_s	Ø d_1	L_{tot}	L_1	recommended tightening torque
		Parallel arbor, without through-coolant		Parallel arbor, with through-coolant					
mm		Weldon shank			mm	mm	mm	mm	N·m
10		XXX		XXX	16	9.8	75	24	5
12		XXX		XXX	20	11.8	80	26	10
16		XXX		XXX	25	15.8	100	40	15
20		XXX		XXX	25	19.8	110	51	25
25		XXX		XXX	25	24.8	120	62	35

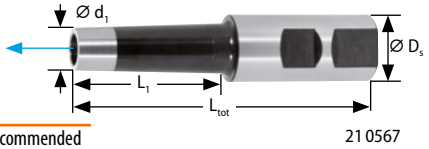


21 0561



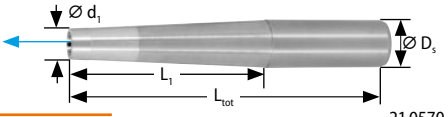
21 0562

for cutter head Ø D	21Z	21 0561	21Z	21 0562	Ø D_s h6		Ø d_1	L_{tot}		L_1		recommended tightening torque
		Solid carbide parallel arbor stub		Solid carbide parallel arbor long	21 0561	21 0562		21 0561	21 0562	21 0561	21 0562	
mm		Plain shank			mm	mm	mm	mm	mm	mm	mm	N·m
10		XXX		XXX	12	16	9.8	95	105	46	54	5
12		XXX		XXX	12	16	11.8	105	115	57	64	10
16		XXX		XXX	16	20	15.8	135	150	85	97	15
20		XXX		XXX	20	25	19.8	160	175	108	115	25
25		XXX		XXX	25	32	24.8	175	190	117	124	35



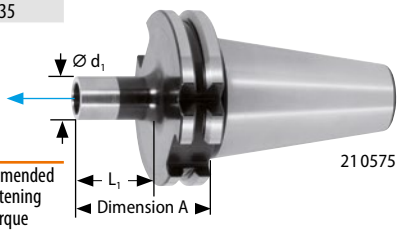
21 0567

for cutter head Ø D	21Z	21 0565	21Z	21 0567	Ø D_s	Ø d_1	L_{tot}	L_1	recommended tightening torque
		Tapered arbor, without through-coolant		Tapered arbor, with through-coolant					
mm		Weldon shank			mm	mm	mm	mm	N·m
10		XXX		XXX	20	9.8	90	36	5
12		XXX		XXX	20	11.8	95	42	10
16		XXX		XXX	25	15.8	115	56	15
20		XXX		XXX	25	19.8	130	72	25
25		XXX		XXX	32	24.8	150	88	35



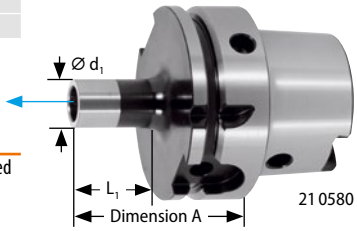
21 0570

for cutter head Ø D	21Z 21 0569	21Z 21 0570	Ø D_s h6		Ø d_1	L_{tot}		L_1		recommended tightening torque
	Solid carbide tapered arbor stub	Solid carbide tapered arbor long								
			21 0569	21 0570		21 0569	21 0570	21 0569	21 0570	
mm	Plain shank		mm	mm	mm	mm	mm	mm	mm	N·m
10	XXX	XXX	16	20	9.8	100	140	48	88	5
12	XXX	XXX	16	20	11.8	105	150	51	94	10
16	XXX	XXX	20	25	15.8	120	170	68	103	15
20	XXX	XXX	25	25	19.8	150	190	92	132	25
25	XXX	XXX	32	32	24.8	150	210	88	148	35



21 0575

for cutter head Ø D	21Z 21 0575	21Z 21 0577	Ø d_1	Dimension A		L_1		recommended tightening torque
	Arbor parallel	Tapered arbor						
				21 0575	21 0577	21 0575	21 0577	
mm	SK 40	SK 40	mm	mm	mm	mm	mm	N·m
10	XXX	XXX	9.8	40	61	21	42	5
12	XXX	XXX	11.8	44	67	25	48	10
16	XXX	XXX	15.8	49	81	30	62	15
20	XXX	XXX	19.8	49	97	30	78	25
25	XXX	XXX	24.8	51	113	32	94	35



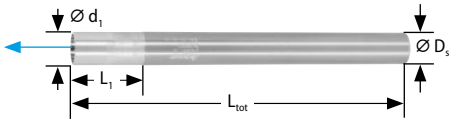
21 0580

for cutter head Ø D	21Z 21 0580	21Z 21 0582	Ø d_1	Dimension A		L_1		recommended tightening torque
	Arbor parallel	Tapered arbor						
				21 0580	21 0582	21 0580	21 0582	
mm	HSK-A 63	HSK-A 63	mm	mm	mm	mm	mm	N·m
10	XXX	XXX	9.8	47	68	21	42	5
12	XXX	XXX	11.8	51	74	25	48	10
16	XXX	XXX	15.8	56	88	30	62	15
20	XXX	XXX	19.8	56	104	30	78	25
25	XXX	XXX	24.8	59	120	33	94	35

Arbor configurable

Shank ground to h6 over its entire length – for individual cutting out and cutting to length.

Note: The shank can also be cut back to Ø $d_{1\,min}$.



21 2000

for cutter head Ø D	29W 21 2000	Ø D_s h6	Ø $d_{1\,min}$	L_{tot}	L_1	recommended tightening torque
	Solid carbide arbor configurable					
mm		mm	mm	mm	mm	N·m
10	XXX	12	9.8	125	20	5
12	XXX	12	11.8	126	26	10
16	XXX	16	15.8	190	35	15
20	XXX	20	19.8	195	40	25
25	XXX	25	24.8	198	45.8	35

Wrench for GARANT TopCut

Type		8×3	10×4	13×4	16×5	21×5
29X 21 9987	Garant Assembly wrench	XXX	XXX	XXX	XXX	XXX
29X 21 9986	Plug-in adapter for torque wrench	XXX	XXX	XXX	XXX	XXX
suitable for cutting head Ø D	mm	10	12	16	20	25
recommended tightening torque	N·m	5	10	15	25	35
suitable torque wrenches 656055		25	25	25	60	120

21 9987

21 9986

D6.3 F6.3

Garant TQ torque screwdriver with T-handle, fixed, automatic triggering

Torque screwdriver with easy-grip 2-component T-handle. The torque is fixed. Toolholder with permanent magnet.

Standard: Tested to DIN EN ISO 6789.

Function: When the torque is reached the screwdriver triggers **with clearly audible and perceptible signal**. The long-travel indication gives the user an unmistakable signal that the set torque has been reached.

Application: In conjunction with **1/4 inch bits** with **C6.3** or **E6.3 shank,** e.g. **Torx Plus® bit** No. **674252.** Ideal for precise tightening of indexable inserts to the specified torque.

Note: Supplied **without** bit.

21 1750

set torque	21B 21 1750	Torque measuring accuracy	Overall length L	Blade length
	Torque screwdriver, fixed setting			
N·m		%	mm	mm
0,2	XXX	±15	107	50
0,38	XXX	±15	107	50
0,45	XXX	±15	107	50
0,6	XXX	±15	107	50
0,9	XXX	±15	107	50
1,0	XXX	±15	107	50
1,2	XXX	±15	107	50
1,3	XXX	±15	107	50
1,5	XXX	±15	107	50
1,8	XXX	±15	107	50
2,2	XXX	±10	107	50
2,8	XXX	±10	107	50
3,0	XXX	±10	107	50
3,5	XXX	±10	107	50
3,8	XXX	±10	107	50
4,2	XXX	±10	107	50
5,0	XXX	±10	107	50
5,7	XXX	±10	107	50

±10% ±15% F6.3

Garant Torque screwdriver set „TQ-Station“, 27 pieces

Torque screwdriver with easy-grip 2-component T-handle and **fixed torque.** 1/4 inch bit holder with magnet. Flexible modular bit-holder station with a sturdy sheet metal body and light-weight plastic storage units. Quick access to the torque screwdrivers and also to the E6.3 precision bits®. Handy storage of items such as indexable inserts in 3 retractable container boxes. Non-tipping solution for the workbench or machine, or for hanging from a perforated panel.

Standard: Tested to DIN EN ISO 6789.

Accuracy: Size 0.6 - 1.5 = ± 15 % of the stated value.
Size 2.2 - 5.7 = ± 10 % of the stated value.

Function: On reaching the set torque value, the screwdriver can be felt and heard to trigger and is then again immediately ready for use. Unlimited release torque.

65 9965

21B 65 9965	"TQ-Station" torque screwdriver set	XXX
Supplied with:		
1 each torque screwdriver No. 211750		Size 0.6; 0.9; 1.2; 1.5; 2.2; 3.0; 3.8; 5.0; 5.7
1 each bit for Torx® No. 674248		Size TX6; TX7; TX8; TX9; TX10; TX15; TX20
1 each bit for Torx Plus® No. 674252		Size 6IP; 7IP; 8IP; 9IP; 10IP; 15IP; 20IP
Storage station		1 pc.
Container boxes (drawers)		3 pcs.

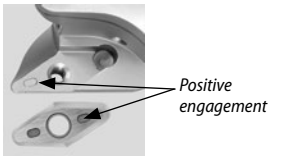
Pull-out drawers for small components.

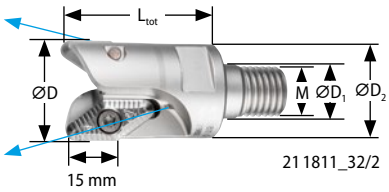
MTC POWER CARD Garant

Garant Plunge milling cutters 90° and 93° MTC for VCG. 2205..

Greater tool stiffness by elimination of twist between indexable insert and insert seat.

Note: Use GARANT torque screwdriver TQ No. **211750 size 5.7** with bit No. **674252 size 20IP**.



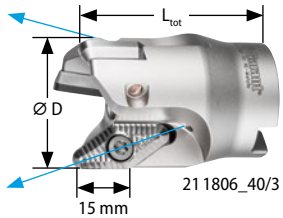


21 1811_32/2

Plunge milling cutter 90° for VCG. 2205..

90°

∅ D / number of teeth Z	210 21 1811 Plunge milling cutter 90° with threaded shank	$∅ D_1$ h6	$∅ D_2$	L_{tot}	Mounting thread M	Circular interpolation milling $∅ D_{min}$	Circular interpolation milling $∅ D_{max}$	Circular interpolation milling a_p	Ramping angle $α_{max}$	Ramping length L for $α_{max}$	suitable indexable insert	Pack of insert screws
mm		mm	mm	mm		mm	mm	mm	degrees	mm		
32/2	XXX	17	29	47	M16	45.3	58.2	4	8.9	95.9	VCG. 2205	219800 (20IP; 5.7 Nm)
40/3	XXX	17	29	47	M16	58.5	74.3	8	17.5	47.5	VCG. 2205	219800 (20IP; 5.7 Nm)
42/3	XXX	17	29	47	M16	62.6	78.3	8	16.5	50.7	VCG. 2205	219800 (20IP; 5.7 Nm)

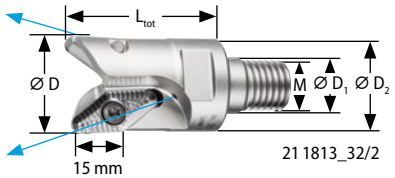


21 1806_40/3

∅ D / number of teeth Z	210 21 1806 Plunge milling cutter 90° with bore	L_{tot}	Mounting bore ∅	Circular interpolation milling $∅ D_{min}$	Circular interpolation milling $∅ D_{max}$	Circular interpolation milling a_p	Ramping angle $α_{max}$	Ramping length L for $α_{max}$	suitable indexable insert	Pack of insert screws
mm		mm	mm	mm	mm	mm	degrees	mm		
40/3	XXX	55	16	58.5	74.3	8	17.5	47.5	VCG. 2205	219800 (20IP; 5.7 Nm)
42/3	XXX	55	16	62.6	78.3	8	16.5	50.7	VCG. 2205	219800 (20IP; 5.7 Nm)
50/4	XXX	55	22	77.1	94.3	10	14.6	57.4	VCG. 2205	219800 (20IP; 5.7 Nm)
52/3	XXX	55	22	81.1	98.2	10	13.9	60.7	VCG. 2205	219800 (20IP; 5.7 Nm)
63/4	XXX	55	22	103.1	120.3	10	10.9	78.2	VCG. 2205	219800 (20IP; 5.7 Nm)
66/4	XXX	55	27	109.1	126.3	10	10.2	83.4	VCG. 2205	219800 (20IP; 5.7 Nm)
80/5	XXX	55	27	137	154.2	10	8.2	104.5	VCG. 2205	219800 (20IP; 5.7 Nm)

Plunge milling cutter 93° for VCG. 2205..

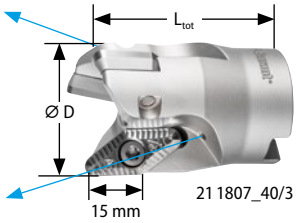
93°



21 1813_32/2

Application: To prevent chips jamming, especially when milling deep pockets.

∅ D / number of teeth Z	210 21 1813 Plunge milling cutter 93° with threaded shank	$∅ D_1$ h6	$∅ D_2$	L_{tot}	Mounting thread M	Circular interpolation milling $∅ D_{min}$	Circular interpolation milling $∅ D_{max}$	Circular interpolation milling a_p	Ramping angle $α_{max}$	Ramping length L for $α_{max}$	suitable indexable insert	Pack of insert screws
mm		mm	mm	mm		mm	mm	mm	degrees	mm		
32/2	XXX	17	29	47	M16	49.2	58.2	4	8.8	96.4	VCG. 2205	219800 (20IP; 5.7 Nm)
40/3	XXX	17	29	47	M16	57.6	74.5	8	17.7	46.9	VCG. 2205	219800 (20IP; 5.7 Nm)
42/3	XXX	17	29	47	M16	61.5	78.6	8	16.7	50	VCG. 2205	219800 (20IP; 5.7 Nm)



21 1807_40/3

∅ D / number of teeth Z	210 21 1807 Plunge milling cutter 93° with bore	L_{tot}	Mounting bore ∅	Circular interpolation milling $∅ D_{min}$	Circular interpolation milling $∅ D_{max}$	Circular interpolation milling a_p	Ramping angle $α_{max}$	Ramping length L for $α_{max}$	suitable indexable insert	Pack of insert screws
mm		mm	mm	mm	mm	mm	degrees	mm		
40/3	XXX	55	16	57.6	74.5	8	17.7	46.9	VCG. 2205	219800 (20IP; 5.7 Nm)
42/3	XXX	55	16	61.5	78.6	8	16.7	50	VCG. 2205	219800 (20IP; 5.7 Nm)
50/4	XXX	55	22	75.9	94.5	10	14.9	56.5	VCG. 2205	219800 (20IP; 5.7 Nm)
52/3	XXX	55	22	79.6	98.6	10	14.1	59.8	VCG. 2205	219800 (20IP; 5.7 Nm)
63/4	XXX	55	22	101.7	120.6	10	11	77.3	VCG. 2205	219800 (20IP; 5.7 Nm)
66/4	XXX	55	27	107.7	126.6	10	10.3	82.4	VCG. 2205	219800 (20IP; 5.7 Nm)
80/5	XXX	55	27	135.7	154.6	10	8.2	103.7	VCG. 2205	219800 (20IP; 5.7 Nm)

Milling inserts for plunge milling cutters No. 211806 – 211813

21 1860 – **Diamond-coated** milling insert for higher cutting speeds and longer tool life in materials with silicon content.
21 1853–1859 – Fine-grain substrate, polished chip breaker steps – extreme reduction in the tendency to edge build-up.

Note: a_p max = 7 mm for roughing with a_e = 1×D.

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	CuZn	Graphite GRP CRP					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	N	N					
21 1853–21 1859	1900	1900	500														400	100		●		○	
21 1860	1900	1900	680															●		●		○	

21 1853 21 1856 21 1857 21 1859 21 1858 21 1860

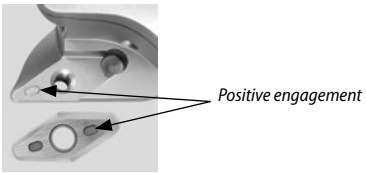
Type			ALU	
21A **21 1853**	VCGX 220505 FR	**HU7810**	XXX	**10**
21A **21 1856**	VCGX 220508 FR	**HU7810**	XXX	**10**
21A **21 1857**	VCGX 220516 FR	**HU7810**	XXX	**10**
21A **21 1859**	VCGX 220520 FR	**HU7810**	XXX	**10**
21A **21 1858**	VCGT 220530 FN	**HU7810**	XXX	**10**
21B **21 1860**	VCGT 220530 FN **diamond-coated**	**HB7810**	XXX	**1**
f_z		mm	0.25	

MTC POWER CARD Garant

Plunge milling cutter 90° and 93° MTC for DGT 11T2..

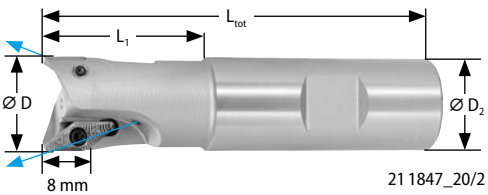
Greater tool stiffness by elimination of twist between indexable insert and insert seat.

Note: Use GARANT torque screwdriver TQ No. **211750 size 0.9** with bit No. **674252 size 7IP**.



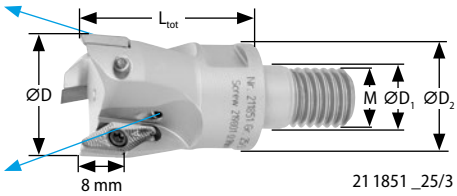
Plunge milling cutter 90° for VDGT 11T2..

90°



21 1847_20/2

Ø D / number of teeth Z	210 **21 1847** Plunge milling cutter 90° **Weldon shank**	L_1	L_{tot}	Ø D_s h6	Circular interpolation milling Ø D_{min}	Circular interpolation milling Ø D_{max}	Circular interpolation milling a_p	Ramping angle α_{max}	Ramping length L for α_{max}	suitable indexable insert	Pack of insert screws
mm		mm	mm	mm	mm	mm	mm	degrees	mm		
16/2	XXX	30	80	16	24.1	30.12	3.5	17	26.2	VDGT 11T2..	219801 (7IP; 0.9 Nm)
20/2	XXX	35	85	20	32	38.12	3.5	12.6	35.8	VDGT 11T2..	219801 (7IP; 0.9 Nm)
25/3	XXX	35	90	25	43.4	48.18	3.5	9.1	50.1	VDGT 11T2..	219801 (7IP; 0.9 Nm)



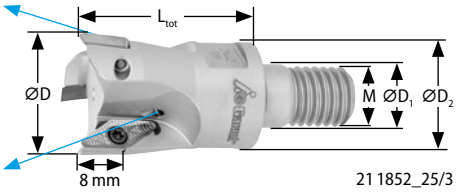
21 1851 _25/3

Ø D / number of teeth Z	210 21 1851 Plunge milling cutter 90° with threaded shank	Ø D_1 h6	Ø D_2	L_{tot}	Mounting thread M	Circular interpolation milling Ø D_{min}	Circular interpolation milling Ø D_{max}	Circular interpolation milling a_p	Ramping angle α_{max}	Ramping length L for α_{max}	suitable indexable insert	Pack of insert screws
mm		mm	mm	mm		mm	mm	mm	degrees	mm		
16/2	XXX	8.5	12.7	35	M8	24.1	30.12	3.5	17	26.2	VDGT 11T2..	219801 (7IP; 0.9 Nm)
20/2	XXX	10.5	17.7	35	M10	32	38.12	3.5	12.6	35.8	VDGT 11T2..	219801 (7IP; 0.9 Nm)
25/3	XXX	12.5	20.7	35	M12	43.4	48.18	3.5	9.1	50.1	VDGT 11T2..	219801 (7IP; 0.9 Nm)
32/4	XXX	17	28.7	42	M16	56.1	62.1	3.5	6.9	66.5	VDGT 11T2..	219801 (7IP; 0.9 Nm)

Plunge milling cutter 93° for VDGT 11T2..

93°

Application: To prevent chips jamming, especially when milling deep pockets.



21 1852_25/3

Ø D / number of teeth Z	210 21 1852 Plunge milling cutter 93° with threaded shank	Ø D_1 h6	Ø D_2	L_{tot}	Mounting thread M	Circular interpolation milling Ø D_{min}	Circular interpolation milling Ø D_{max}	Circular interpolation milling a_p	Ramping angle α_{max}	Ramping length L for α_{max}	suitable indexable insert	Pack of insert screws
mm		mm	mm	mm		mm	mm	mm	degrees	mm		
16/2	XXX	8.5	12.7	35	M8	23.74	30.16	3.5	17.2	25.8	VDGT 11T2..	219801 (7IP; 0.9 Nm)
20/2	XXX	10.5	17.7	35	M10	31.54	38.14	3.5	12.8	35.3	VDGT 11T2..	219801 (7IP; 0.9 Nm)
25/3	XXX	12.5	20.7	35	M12	41.54	48.14	3.5	9.5	47.8	VDGT 11T2..	219801 (7IP; 0.9 Nm)
32/4	XXX	17	28.7	42	M16	55.54	62.22	3.5	6.9	65.9	VDGT 11T2..	219801 (7IP; 0.9 Nm)

Garant Milling inserts for plunge milling cutters No. 211847 – 211852

21 1864 – **Diamond-coated** milling insert for higher cutting speeds and longer tool life in materials with silicon content.

21 1862/1867/1868 – Fine-grain substrate, polished chip breaker steps – extreme reduction of the tendency to edge build-up.

Note: a_p max = 3 mm for roughing with a_e = 1×D.

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	CuZn	Graphite GRP CRP					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	N	N					
21 1862–21 1868	1900	1900	500														400	100		●		○	
21 1864	1900	1900	680															●		●		○	

21 1867

21 1868

21 1862

21 1864

Type			ALU	
21A 21 1867	VDGT 11T204 FR	HU7810	XXX	10
21A 21 1868	VDGT 11T208 FR	HU7810	XXX	10
21A 21 1862	VDGT 11T210 FN	HU7810	XXX	10
21B 21 1864	VDGT 11T210 FN **diamond coated**	HB7810	XXX	1
f_z		mm	0.17	

POWER CARD

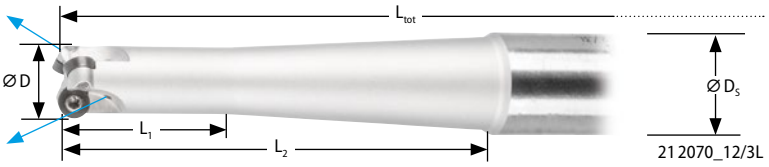
Copy and face mills for RD..0501, RD..0702

Milling body with irregular pitch for smooth cutting.

- High axial run-out accuracy and concentricity
- Stepless repositioning of the insert as the cutting edge wears.

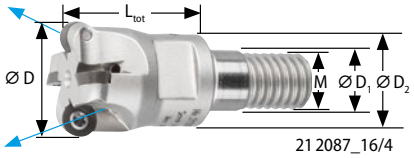
Copy and face mills for RD..0501

Note: $a_{p\,max}$ = 1.1 mm.
Use GARANT torque screwdriver TQ No. **211750 size 0.6** with bit No. **674252 size 6IP**.



21 2070_12/3L

Ø D / number of effective cutting edges Z	210 21 2070 Copy mill 0° negative Plain shank	Number of cutting edges Z	L_1	L_2	L_{tot}	Ø D_s h6	Circular interpolation milling Ø D_{min}	Circular interpolation milling Ø D_{max}	Circular interpolation milling a_p	Ramping angle α_{max}	Ramping length L for α_{max}	Pack of insert screws
mm			mm	mm	mm	mm	mm	mm	mm	degrees	mm	
10	XXX	2	30	–	70	10	15	19.1	1.1	34.3	1.6	219802 (6IP; 0.6 Nm)
10/2	XXX	2	14	–	70	8	15	19.1	1.1	34.3	1.6	219802 (6IP; 0.6 Nm)
10/2L	XXX	2	39	–	110	12	15	19.1	1.1	34.3	1.6	219802 (6IP; 0.6 Nm)
12	XXX	3	30	–	75	12	18.9	23.1	1.1	9.2	6.8	219802 (6IP; 0.6 Nm)
12/3	XXX	3	15	–	75	10	18.9	23.1	1.1	9.2	6.8	219802 (6IP; 0.6 Nm)
12/3L	XXX	3	30	70	120	16	18.9	23.1	1.1	9.2	6.8	219802 (6IP; 0.6 Nm)
15	XXX	4	30	–	80	16	24.9	29	1.1	6.6	9.5	219802 (6IP; 0.6 Nm)
16	XXX	4	30	–	80	16	26.9	31	1.1	5.8	10.9	219802 (6IP; 0.6 Nm)
16/4	XXX	4	20	–	80	14	26.9	31	1.1	5.8	10.9	219802 (6IP; 0.6 Nm)

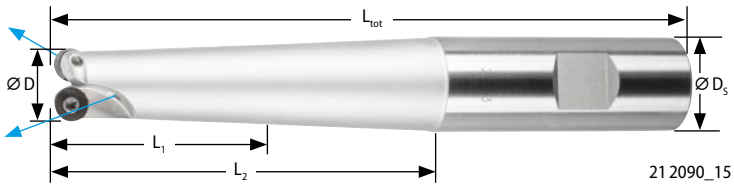


21 2087_16/4

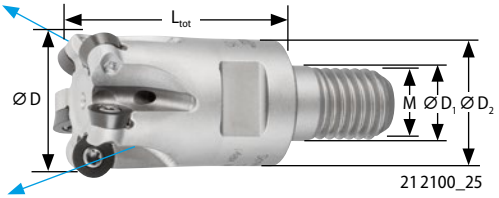
Ø D / number of teeth Z	210 21 2087 Copy mill 0° negative with threaded shank	Number of cutting edges Z	Ø D_1 h6	L_{tot}	Ø D_2	Mounting thread M	Circular interpolation milling Ø D_{min}	Circular interpolation milling Ø D_{max}	Circular interpolation milling a_p	Ramping angle α_{max}	Ramping length L for α_{max}	Pack of insert screws
mm			mm	mm	mm		mm	mm	mm	degrees	mm	
10/2	XXX	2	5.5	20	9.75	M5	15	19.1	1.1	34.3	1.6	219802 (6IP; 0.6 Nm)
12/3	XXX	3	8.5	20	11.75	M8	18.9	23.1	1.1	9.2	6.8	219802 (6IP; 0.6 Nm)
16/4	XXX	4	8.5	20	12.7	M8	26.9	31	1.1	5.8	10.9	219802 (6IP; 0.6 Nm)

Copy and face mills for RD..0702

Note: $a_{p\,max}$ = 1.5 mm.
Use GARANT torque screwdriver TQ No. **211750 size 1.2** with bit shank No. **674252 size 8IP**.



21 2090_15



21 2100_25

Ø D	210 21 2090 Copy mill 0° negative Weldon shank	Number of cutting edges Z	L_1	L_2	L_{tot}	Ø D_s h6	Circular interpolation milling Ø D_{min}	Circular interpolation milling Ø D_{max}	Circular interpolation milling a_p	Ramping angle α_{max}	Ramping length L for α_{max}	Pack of insert screws
mm			mm	mm	mm	mm	mm	mm	mm	degrees	mm	
15	XXX	2	24.5	40	90	16	22.9	28.9	1.5	20	4.1	219803 (8IP; 1.2 Nm)
15L	XXX	2	26	80	135	20	22.9	28.9	1.5	20	4.1	219803 (8IP; 1.2 Nm)
16L	XXX	2	26	80	135	20	24.9	30.6	1.5	12	7.1	219803 (8IP; 1.2 Nm)

Ø D	210 21 2100 Copy mill 0° negative with threaded shank	Number of cutting edges Z	Ø D_1 h6	L_{tot}	Ø D_2	Mounting thread M	Circular interpolation milling Ø D_{min}	Circular interpolation milling Ø D_{max}	Circular interpolation milling a_p	Ramping angle α_{max}	Ramping length L for α_{max}	Pack of insert screws
mm			mm	mm	mm		mm	mm	mm	degrees	mm	
15	XXX	2	8.5	23	12.7	M8	22.9	28.9	1.5	20	4.1	219803 (8IP; 1.2 Nm)
16	XXX	3	8.5	23	12.7	M8	25.2	30.7	1.5	4	21.2	219803 (8IP; 1.2 Nm)
20	XXX	4	10.5	30	17.7	M10	33	38.7	1.5	4.9	17.7	219803 (8IP; 1.2 Nm)
25	XXX	5	12.5	35	20.7	M12	43	48.7	1.5	5.2	16.6	219803 (8IP; 1.2 Nm)
32	XXX	5	17	42	28.7	M16	56.9	62.6	1.5	3.4	25.2	219803 (8IP; 1.2 Nm)
35	XXX	6	17	42	28.7	M16	62.9	68.6	1.5	3.6	23.7	219803 (8IP; 1.2 Nm)

POWER CARD

Copy and face mills for RD..1003

Milling body with irregular pitch for smooth cutting.

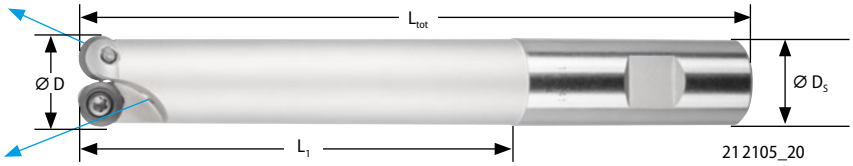
- High axial run-out accuracy and concentricity
- Stepless repositioning of the insert as the cutting edge wears.

21 2115/2130/2140 – Vibration reduction and soft cutter edge entry due to 7° positive setting of the indexable inserts.

Note: Use GARANT torque screwdriver TQ No. **211750 size 3.8** with bit No. **674252 size 15IP**.
$a_{p\,max}$ = 2.5 mm.

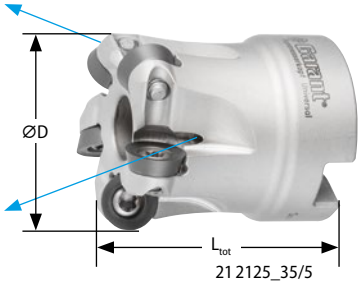
Indexable insert set to 0° negative.

Indexable insert set to 7° positive.



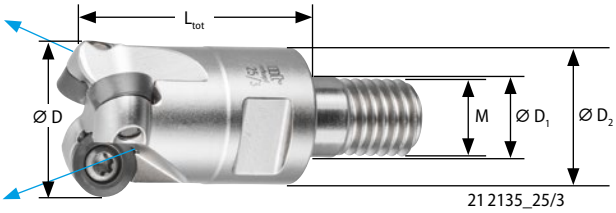
21 2105_20

Ø D	21 2105	21 2110	21 2115	Number of cutting edges Z	L_1		L_{tot}		Ø D_s h6	Circular interpolation milling Ø D_{min}	Circular interpolation milling Ø D_{max}	Circular interpolation milling a_p	Ramping angle α_{max}	Ramping length L for α_{max}	Pack of insert screws
	Copy mill														
	0° negative	0° negative heavy metal	7° positive		21 2105 21 2110	21 2115	21 2105 21 2110	21 2115		21 2105 21 2110	21 2105 21 2110	21 2105 21 2110	21 2105 21 2110	21 2105 21 2110	
mm	Weldon shank	Weldon shank	Weldon shank		mm	mm	mm	mm	mm	mm	mm	mm	degrees	mm	
20	XXX	–	XXX	2	60	47	115	100	20	30	38.6	2.5	20.3	6.7	219804 (15IP; 3.8 Nm)
20L	XXX	XXX	–	2	100	–	155	–	20	30	38.6	2.5	20.3	6.7	219804 (15IP; 3.8 Nm)
25	XXX	–	XXX	3	35	48	107	100	20	39.9	48.6	2.5	11.1	12.7	219804 (15IP; 3.8 Nm)
25L	XXX	–	–	2	70	–	180	–	25	39.9	48.6	2.5	11.1	12.7	219804 (15IP; 3.8 Nm)



21 2125_35/5

Ø D / number of teeth Z	21 2125	21 2130	L_{tot}	Mounting bore Ø	Circular interpolation milling Ø D_{min}	Circular interpolation milling Ø D_{max}	Circular interpolation milling a_p	Ramping angle α_{max}	Ramping length L for α_{max}	Pack of insert screws
	Copy mill				21 2125	21 2125	21 2125	21 2125	21 2125	
	0° negative with bore	7° positive with bore								
mm			mm	mm	mm	mm	mm	degrees	mm	
35/3	XXX	–	40	16	59.9	68.6	2.5	4.4	32.6	219804 (15IP; 3.8 Nm)
35/5	XXX	XXX	40	16	59.9	68.6	2.5	4.4	32.6	219804 (15IP; 3.8 Nm)
42/6	XXX	XXX	40	16	74	82.6	2.5	4	35.6	219804 (15IP; 3.8 Nm)
52/5	XXX	XXX	50	22	93.9	102.5	2.5	2.5	56.7	219804 (15IP; 3.8 Nm)
52/7	XXX	–	50	22	93.9	102.5	2.5	2.5	56.7	219804 (15IP; 3.8 Nm)



21 2135_25/3

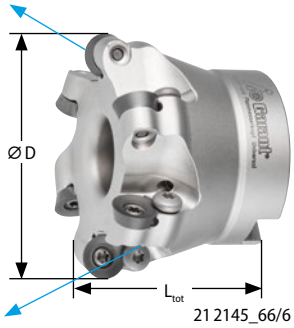
Ø D / number of teeth Z	21 2135	21 2140	Ø D_1 h6	L_{tot}	Ø D_2	Mounting thread M	Circular interpolation milling Ø D_{min}	Circular interpolation milling Ø D_{max}	Circular interpolation milling a_p	Ramping angle α_{max}	Ramping length L for α_{max}	Pack of insert screws
	Copy mill						21 2135	21 2135	21 2135	21 2135	21 2135	
	0° negative with threaded shank	7° positive with threaded shank										
mm			mm	mm	mm		mm	mm	mm	degrees	mm	
20/2	XXX	XXX	10.5	30	17.7	M10	30	38.6	2.5	20.3	6.7	219804 (15IP; 3.8 Nm)
25/2	XXX	–	12.5	35	20.7	M12	39.9	48.6	2.5	11.1	12.7	219804 (15IP; 3.8 Nm)
25/3	XXX	XXX	12.5	35	20.7	M12	39.9	48.6	2.5	11.1	12.7	219804 (15IP; 3.8 Nm)
32/4	XXX	–	17	42	28.7	M16	53.9	62.5	2.5	6.6	21.7	219804 (15IP; 3.8 Nm)
35/5	XXX	XXX	17	42	28.7	M16	59.9	68.5	2.5	4.4	32.6	219804 (15IP; 3.8 Nm)
42/5	XXX	XXX	17	42	28.7	M16	74	82.6	2.5	4	32.6	219804 (15IP; 3.8 Nm)
42/6	XXX	XXX	17	42	28.7	M16	74	82.6	2.5	4	35.6	219804 (15IP; 3.8 Nm)

Copy and face mills for RD..12T3, RD..1604

Milling body with irregular pitch for smooth cutting.

- High axial run-out accuracy and concentricity
- Stepless repositioning as the cutting edge wears.

Attention: Retaining screws and retaining washers should **not** be used for inserts with positive geometry.



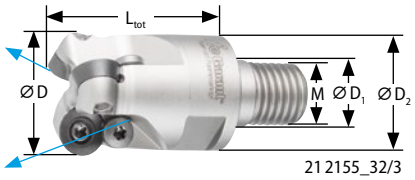
21 2145_66/6

Copy and face mills for RD..12T3

21 2150/2160 – Vibration reduction and soft cutter edge entry due to 7° positive setting of the indexable inserts.

Note: Use GARANT torque screwdriver TQ No. **211750 size 3.8** with bit No. **674252 size 15IP**.
$a_{p\,max}$ = 4.0 mm.

Ø D / number of teeth Z	210 21 2145 Copy mill 0° negative with bore	210 21 2150 Copy mill 7° positive with bore	L_{tot}	Mounting bore Ø	Circular interpolation milling Ø D_{min} 21 2145	Circular interpolation milling Ø D_{max} 21 2145	Circular interpolation milling a_p 21 2145	Ramping angle α_{max} 21 2145	Ramping length L for α_{max} 21 2145	Pack of insert screws	Set of retaining screws
mm			mm	mm	mm	mm	mm	degrees	mm		
42/4	XXX	–	40	16	71.8	83.2	4	5.7	40	219805 (15IP; 3.8 Nm)	219807 (15IP; 3.8 Nm)
48/4	XXX	–	50	22	83.9	95.2	4	6.1	37.7	219805 (15IP; 3.8 Nm)	219807 (15IP; 3.8 Nm)
52/5	XXX	XXX	50	22	91.9	103.2	4	5.3	43.1	219805 (15IP; 3.8 Nm)	219807 (15IP; 3.8 Nm)
63/6	XXX	XXX	50	22	113.9	125.2	4	4.1	55.8	219805 (15IP; 3.8 Nm)	219807 (15IP; 3.8 Nm)
66/6	XXX	XXX	50	27	119.9	131.2	4	3.8	59.7	219805 (15IP; 3.8 Nm)	219807 (15IP; 3.8 Nm)
80/7	XXX	XXX	50	27	147.9	159.2	4	2.9	78.7	219805 (15IP; 3.8 Nm)	219807 (15IP; 3.8 Nm)
100/9	XXX	–	50	32	187.9	199.2	4	1.6	140.1	219805 (15IP; 3.8 Nm)	219807 (15IP; 3.8 Nm)
125/10	XXX	–	63	40	238	249.3	4	1.1	202.4	219805 (15IP; 3.8 Nm)	219807 (15IP; 3.8 Nm)



21 2155_32/3

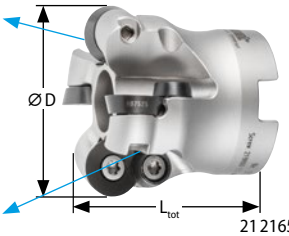
Ø D / number of teeth Z	210 21 2155 Copy mill 0° negative with threaded shank	210 21 2160 Copy mill 7° positive with threaded shank	Ø D_1 h6	L_{tot}	Ø D_2	Mounting thread M	Circular interpolation milling Ø D_{min} 21 2155	Circular interpolation milling Ø D_{max} 21 2155	Circular interpolation milling a_p 21 2155	Ramping angle α_{max} 21 2155	Ramping length L for α_{max} 21 2155	Pack of insert screws	Set of retaining screws
mm			mm	mm	mm		mm	mm	mm	degrees	mm		
24/2	XXX	–	12.5	35	20.7	M12	35.9	47.3	4	25	8.6	219805 (15IP; 3.8 Nm)	219807 (15IP; 3.8 Nm)
32/3	XXX	XXX	17	42	28.7	M16	51.9	63.2	4	9.8	23.2	219805 (15IP; 3.8 Nm)	219807 (15IP; 3.8 Nm)
35/3	XXX	XXX	17	42	28.7	M16	57.9	69.2	4	8.1	28.2	219805 (15IP; 3.8 Nm)	219807 (15IP; 3.8 Nm)
35/4	XXX	–	17	42	28.7	M16	57.9	69.2	4	8.1	28.2	219805 (15IP; 3.8 Nm)	219807 (15IP; 3.8 Nm)
42/4	XXX	XXX	17	42	28.7	M16	71.8	83.2	4	5.7	40	219805 (15IP; 3.8 Nm)	219807 (15IP; 3.8 Nm)

Copy and face mills for RD..1604

21 2167 – Vibration reduction and soft cutter edge entry due to 7° positive setting of the indexable inserts.

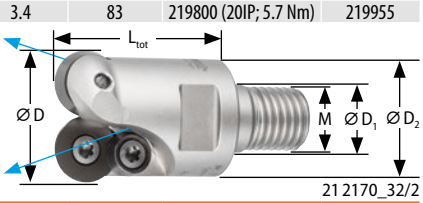
Application: With pack of insert screws No. 219800 - for securing indexable inserts and retaining washers.

Note: Use GARANT torque screwdriver TQ No. **211750 size 5.7** with bit No. **674252 size 20IP**.
$a_{p\,max}$ = 5.0 mm.



21 2165_52/4

Ø D / number of teeth Z	210 21 2165 Copy mill 0° negative with bore	210 21 2167 Copy mill 7° positive with bore	L_{tot}	Mounting bore Ø	Circular interpolation milling Ø D_{min} 21 2165	Circular interpolation milling Ø D_{max} 21 2165	Circular interpolation milling a_p 21 2165	Ramping angle α_{max} 21 2165	Ramping length L for α_{max} 21 2165	Pack of insert screws	Set of retaining washers
mm			mm	mm	mm	mm	mm	degrees	mm		
52/4	XXX	XXX	50	22	87.8	102.7	5	9.5	30	219800 (20IP; 5.7 Nm)	219955
66/5	XXX	XXX	50	27	115.8	130.6	5	6.3	45.1	219800 (20IP; 5.7 Nm)	219955
80/6	XXX	XXX	50	27	143.8	158.6	5	4.7	61.2	219800 (20IP; 5.7 Nm)	219955
100/7	XXX	XXX	50	32	183.8	198.6	5	3.4	83	219800 (20IP; 5.7 Nm)	219955



21 2170_32/2

Ø D / number of teeth Z	210 21 2170 Copy mill 0° negative with threaded shank	Ø D_1 h6	L_{tot}	Ø D_2	Mounting thread M	Circular interpolation milling Ø D_{min}	Circular interpolation milling Ø D_{max}	Circular interpolation milling a_p	Ramping angle α_{max}	Ramping length L for α_{max}	Pack of insert screws	Set of retaining washers
mm		mm	mm	mm		mm	mm	mm	degrees	mm		
32/2	XXX	17	42	28.7	M16	48	62.8	5	21.8	12.5	219800 (20IP; 5.7 Nm)	219955

Garant Milling inserts RD 05/07/10/12/16 for indexable copy and face mills No. 212070 – 212170

All indexable inserts are suitable for use with carriers that are 0° negative and also with carriers that are 7° positive.

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 67 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	CuZn	Graphite GRP CRP	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	M	M	S	K	N	N						
HU7710	**400**	**300**	**300**														○			●		○	
HB7810	**400**	**400**	**400**														●			●		○	
HB7525				**380**	**290**	**240**	210	170				240	170		200				●	●	●	●	●
HB7515				430	330	270	**230**	**200**				300	210		230				●	○	○	●	●
HB7505				275	275	250	**160**	**125**	**155**	**140**	110				**240**					○		●	
HB7210							**170**	**135**	**165**	**150**	120											●	
HB7635												**190**	**120**							○		●	
HB7535				175	175	160						**160**	**140**	60						○		●	
HB7520				**275**	**275**	**250**	160	125				**260**	210		240			●		○		●	
CBN725									**350**	**300**	**300**				**500**						●	●	●
HB735				**330**	**255**	**210**	**180**	**150**				**220**	160		180					●		●	
HB8520						**250**	**180**	150														●	
HB720			280	**300**	**280**	**250**	130	120	50	40	30	**210**	180	45	230	400	○	●		○		●	●

Milling inserts RDH. 0501 MO.N, RD.. 0702 MO..

Note: Standard application values for $a_e = 0.3 \times D$ / $a_{pmax} = 1.1$ mm.

21 2178 21 2181 21 2184 21 2185 21 2189 21 2195

Type			ALU	ST900	ST1400	HART	INOX	UNI		f_z mm
21A 21 2178	RDHT 0501 MOFN **positive**	HU7710	XXX	–	–	–	–	–	10	0.15
21B 21 2180	RDHX 0501 MOFN **diamond-coated, positive**	HB7810	XXX	–	–	–	–	–	1	0.15
21A 21 2181	RDHW 0501 MOT	HB7525	–	XXX	–	–	–	–	10	0.15
21A 21 2182	RDHX 0501 MOTN	HB7525	–	XXX	–	–	–	–	10	0.15
21A 21 2184		HB7515	–	–	XXX	–	–	–	10	0.15
21A 21 2185		HB7505	–	–	–	XXX	–	–	10	0.08
21A 21 2186		HB7210	–	–	–	XXX	–	–	10	0.08
21A 21 2189	RDHX 0501 MOSN **positive**	HB7635	–	–	–	–	XXX	–	10	0.12
21A 21 2190	RDEX 0501 MOSN	HB7535	–	–	–	–	XXX	–	10	0.12
21A 21 2195	RDHX 0501 MOTN	HB7520	–	–	–	–	–	XXX	10	–

Note: Standard application values for $a_e = 0.3 \times D$ / $a_{pmax} = 1.5$ mm.
21 2217 – Mount with tightening value 0.9 Nm.

21 2200 21 2211 21 2213 21 2215 21 2219 21 2224

Type			ALU	ST900	ST1400	HART	INOX	UNI		f_z mm
21A 21 2200	RDHT 0702 MOFN **positive**	HU7710	XXX	–	–	–	–	–	10	0.18
21B 21 2201	RDHT 0702 MOFN **diamond-coated, positive**	HB7810	XXX	–	–	–	–	–	1	0.18
21A 21 2211	RDHW 0702 MOT	HB7525	–	XXX	–	–	–	–	10	0.18
21A 21 2212	RDHX 0702 MOTN	HB7525	–	XXX	–	–	–	–	10	0.18
21A 21 2213		HB7515	–	–	XXX	–	–	–	10	0.18
21A 21 2215		HB7505	–	–	–	XXX	–	–	10	0.13
21A 21 2216		HB7210	–	–	–	XXX	–	–	10	0.13
21A 21 2217		CBN725	–	–	–	XXX	–	–	1	0.13
21A 21 2219	RDHX 0702 MOSN **positive**	HB7635	–	–	–	–	XXX	–	10	0.18
21A 21 2220	RDEX 0702 MOSN	HB7535	–	–	–	–	XXX	–	10	0.18
21A 21 2222	RDNX 0702 MOEN **positive**	HB7635	–	–	–	–	XXX	–	10	0.18
21A 21 2224	RDHX 0702 MO	HB735	–	–	–	–	–	XXX	10	–
21A 21 2225	RDHX 0702 MOTN	HB7520	–	–	–	–	–	XXX	10	–

Milling inserts RD.. 1003 MO.., RD.. 12T3 MO.., RD.. 1604 MO..

Note: Standard application values for $a_e = 0.3 \times D$ / $a_{pmax} = 2.5$ mm.
21 2247 – Mount with tightening value 3.0 Nm.

21 2230 21 2241 21 2244 21 2243 21 2245 21 2249 21 2254

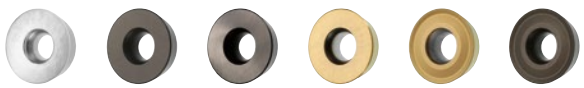
Type			ALU	ST900	ST1100	ST1400	HART	INOX	UNI		f_z mm
21A 21 2230	RDHT 1003 MOFN **positive**	HU7710	XXX	–	–	–	–	–	–	10	0.22
21B 21 2231	RDHT 1003 **diamond-coated, positive**	HB7810	XXX	–	–	–	–	–	–	1	0.22
21A 21 2241	RDHW 1003 MOT	HB7525	–	XXX	–	–	–	–	–	10	0.22
21A 21 2242	RDHX 1003 MOTN	HB7525	–	XXX	–	–	–	–	–	10	0.22
21A 21 2244	RDMT 1003 MO	HB8520	–	–	XXX	–	–	–	–	10	0.22
21A 21 2243	RDHX 1003 MOTN	HB7515	–	–	–	XXX	–	–	–	10	0.22
21A 21 2245	RDHW 1003 MOTN	HB7505	–	–	–	–	XXX	–	–	10	0.16
21A 21 2246		HB7210	–	–	–	–	XXX	–	–	10	0.16
21A 21 2247	RDHX 1003 MOTN	CBN725	–	–	–	–	XXX	–	–	1	0.16
21A 21 2249	RDHX 1003 MOT **positive**	HB7635	–	–	–	–	–	XXX	–	10	0.22
21A 21 2250	RDEX 1003 MOSN	HB7535	–	–	–	–	–	XXX	–	10	0.22
21A 21 2252	RDNX 1003 MOEN **positive**	HB7635	–	–	–	–	–	XXX	–	10	0.22
21A 21 2254	RDHX 1003 MOT	HB735	–	–	–	–	–	–	XXX	10	–
21A 21 2255	RDHW 1003 MOTN	HB7520	–	–	–	–	–	–	XXX	10	–
21A 21 2256	RDMT 1003 MO	HB720	–	–	–	–	–	–	XXX	10	–

Note: Standard application values for $a_e = 0.3 \times D$ / $a_{pmax} = 4.0$ mm.

21 2260 21 2271 21 2274 21 2273 21 2275 21 2279 21 2284

Type			ALU	ST900	ST1100	ST1400	HART	INOX	UNI		f_z mm
21A 21 2260	RDHT 12T3 MOFN **positive**	HU7710	XXX	–	–	–	–	–	–	10	0.22
21B 21 2261	RDHT 12T3 **diamond-coated, positive**	HB7810	XXX	–	–	–	–	–	–	1	0.22
21A 21 2271	RDHW 12T3 MOT	HB7525	–	XXX	–	–	–	–	–	10	0.22
21A 21 2272	RDHX 12T3 MOTN	HB7525	–	XXX	–	–	–	–	–	10	0.22
21A 21 2274	RDMT 12T3 MO	HB8520	–	–	XXX	–	–	–	–	10	0.22
21A 21 2273	RDHX 12T3 MOTN	HB7515	–	–	–	XXX	–	–	–	10	0.22
21A 21 2275	RDMW 12T3 MOTN	HB7505	–	–	–	–	XXX	–	–	10	0.16
21A 21 2276	RDHW 12T3 MOTN	HB7210	–	–	–	–	XXX	–	–	10	0.16
21A 21 2279	RDHX 12T3 MOT **positive**	HB7635	–	–	–	–	–	XXX	–	10	0.22
21A 21 2280	RDEX 12T3 MOSN	HB7535	–	–	–	–	–	XXX	–	10	0.22
21A 21 2282	RDNX 12T3 MOEN **positive**	HB7635	–	–	–	–	–	XXX	–	10	0.22
21A 21 2284	RDHX 12T3 MOT	HB735	–	–	–	–	–	–	XXX	10	–
21A 21 2285	RDMW 12T3 MOTN	HB7520	–	–	–	–	–	–	XXX	10	–
21A 21 2286	RDMT 12T3 MO	HB720	–	–	–	–	–	–	XXX	10	–

Note: Standard application values for $a_e = 0.3 \times D$ / $a_{pmax} = 5.0$ mm.



21 2288 21 2296 21 2298 21 2300 21 2304 21 2309

Type			ALU	ST900	ST1400	HART	INOX	UNI		f_z mm
21A 21 2288	RDHT 1604 MOFN **positive**	HU7710	XXX	–	–	–	–	–	10	0.4
21B 21 2289	RDHT 1604 **diamond-coated, positive**	HB7810	XXX	–	–	–	–	–	1	0.4
21A 21 2296	RDHW 1604 MOT	HB7525	–	XXX	–	–	–	–	10	0.3
21A 21 2297	RDHX 1604 MOTN	HB7525	–	XXX	–	–	–	–	10	0.3
21A 21 2298		HB7515	–	–	XXX	–	–	–	10	0.3
21A 21 2300	RDMW 1604 MOTN	HB7505	–	–	–	XXX	–	–	10	0.2
21A 21 2301	RDHW 1604 MOTN	HB7210	–	–	–	XXX	–	–	10	0.2
21A 21 2304	RDHX 1604 MOT **positive**	HB7635	–	–	–	–	XXX	–	10	0.3
21A 21 2305	RDEX 1604 MOSN	HB7535	–	–	–	–	XXX	–	10	0.3
21A 21 2307	RDNX 1604 MOEN **positive**	HB7635	–	–	–	–	XXX	–	10	0.3
21A 21 2309	RDHX 1604 MOT	HB735	–	–	–	–	–	XXX	10	–
21A 21 2310	RDMW 1604 MOTN	HB7520	–	–	–	–	–	XXX	10	–

HPC

POWER CARD

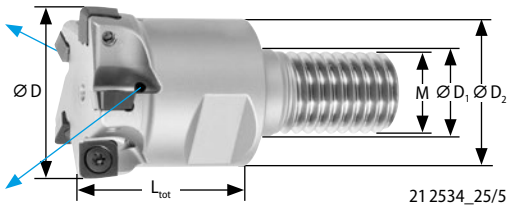
Precision finishing mills for CPHX0602.. / CPHX09T3..

Precision finish milling for **extremely efficient en pre-finish machining and finish machining.** Due to the revised wiper geometry, suitable for **outstanding surface quality** in **ground finish standard**. **Extreme time saving** available due to a **large line skip** and a **high feed rate per tooth**.

Application: Typical tool for tool and die manufacturing.

Precision finishing mills for CPHX0602..

Note: GARANT torque screwdriver TQ No. **211750 size 1.0** with bit No. **674252 size 7IP**.

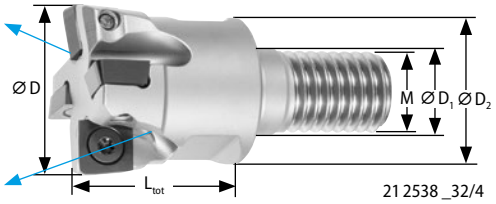


21 2534_25/5

Ø D / number of teeth Z	210 21 2534 Finishing mills with thread	$a_{p\,max}$	Ø D_1 h6	L_{tot}	Ø D_2	Mounting thread M	suitable indexable insert	Pack of insert screws
mm		mm	mm	mm	mm			
16/3	XXX	2.5	8.5	23	13	M8	CPHX 0602..	219799 3 (7IP; 1.0 Nm)
20/4	XXX	2.5	10.5	30	18	M10	CPHX 0602..	219799 3 (7IP; 1.0 Nm)
25/5	XXX	2.5	12.5	35	21	M12	CPHX 0602..	219799 3 (7IP; 1.0 Nm)

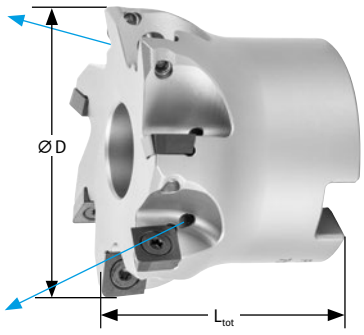
Precision finishing mills for CPHX09T3..

Note: GARANT torque screwdriver TQ No. **211750 size 3.8** with bit No. **674252 size 15IP**.



21 2538 _32/4

Ø D / number of teeth Z	210 21 2538 Finishing mills with thread	$a_{p\,max}$	Ø D_1 h6	L_{tot}	Ø D_2	Mounting thread M	suitable indexable insert	Pack of insert screws
mm		mm	mm	mm	mm			
25/3	XXX	3	12.5	35	21	M12	CPHX 09T3..	219799 4 (15IP; 3.8 Nm)
32/4	XXX	3	17	42	29	M16	CPHX 09T3..	219799 4 (15IP; 3.8 Nm)
35/4	XXX	3	17	42	29	M16	CPHX 09T3..	219799 4 (15IP; 3.8 Nm)
42/5	XXX	3	17	42	29	M16	CPHX 09T3..	219799 4 (15IP; 3.8 Nm)



21 2542_52/7

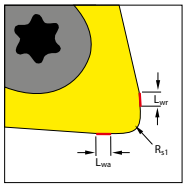
Ø D / number of teeth Z	210 21 2542 Finishing mills with bore	$a_{p\,max}$	L_{tot}	Mounting bore Ø	suitable indexable insert	Pack of insert screws
mm		mm	mm	mm		
42/5	XXX	3	40	16	CPHX 09T3..	219799 4 (15IP; 3.8 Nm)
52/7	XXX	3	40	22	CPHX 09T3..	219799 4 (15IP; 3.8 Nm)
66/8	XXX	3	50	27	CPHX 09T3..	219799 4 (15IP; 3.8 Nm)

Milling inserts for precision finishing mills No. 212534 /212538 /212542

- Inserts with improved wiper geometry for **more efficient machine processes in tool and die manufacture.**
- Extreme **time saving** available due to large stepover and high feed rate per tooth.
- Milling inserts with **radial** and **axial** wiper geometry.

Concentricity +/- 0.020 mm.

Recommendation: For pure face milling operations, reduce Vc by 30%.



Note:	Standard application values for ae 0.2 mm. L_{wa} represents the axial wiper length. L_{wr} represents the radial wiper length.

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	TOOLOX® 33 HRC	TOOLOX® 44 HRC	INOX < 900 N	INOX > 900 N	GGG					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	H	H	M	M	K					
HB4015				400	380	360	340	320	200					250	200	320	300	320		●	●	●	●
HB7705								320	200	180	160							300			○	●	●

Milling inserts CPHX0602..

Type			ST1400	HART		L_{wa} mm	L_{wr} mm	RS_1 mm	< 1400 N f_z mm	< 65 HRC f_z mm
21A **21 2552**	CPHX 060205 ER	HB4015	XXX	–	**10**	1	1.5	0,5	0.25	–
21A **21 2554**	CPHX 060210 ER	HB4015	XXX	–	**10**	1	1.5	1	0.25	–
21A **21 2558**		HB7705	–	XXX	**10**	0.5	0.8	1	–	0.15

Milling inserts CPHX09T3..

Type			ST1400	HART		L_{wa} mm	L_{wr} mm	RS_1 mm	< 1400 N f_z mm	< 65 HRC f_z mm
21A **21 2572**	CPHX 09T305 ER	HB4015	XXX	–	**10**	1	2	0,5	0.25	–
21A **21 2574**	CPHX 09T310 ER	HB4015	XXX	–	**10**	1	2	1	0.25	–
21A **21 2578**		HB7705	–	XXX	**10**	0.5	0.8	1	–	0.15

POWER CARD

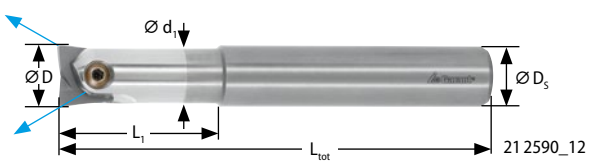
Precision copy mill

Exactly accurate insert bedding due to optimised design of insert and insert seat tolerances.
Highest interchange accuracy guaranteed: ± 0.015 mm.

Size 8 – Without through–coolant feed.
21 2620 – Without through–coolant feed.

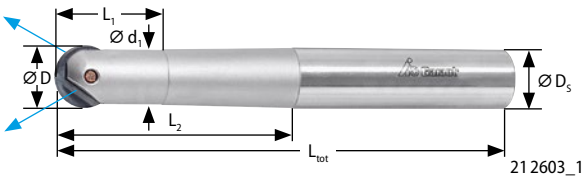
Application: General use for finishing and semi-finishing operations.
21 2590/2592 – **Solid carbide –** for large depths of cut and to minimise vibration.
21 2601–2620 – **Steel –** for general use in machining drop-forgings, and in tool and mould making.

Note:	Calculate the speed based on the effective Ø D_w.
Size 8 –	Use GARANT torque screwdriver TQ No. **211750 size 0.9** with bit No. **674252 size 7IP**.
Size 10 –	Use GARANT torque screwdriver TQ No. **211750 size 1.2** with bit No. **674252 size 8IP**.
Size 12 –	Use GARANT torque screwdriver TQ No. **211750 size 2.2** with bit No. **674252 size 10IP**.
Size 16 –	Use GARANT torque screwdriver TQ No. **211750 size 3.0** with bit No. **674252 size 15IP**.
Size 20 –	Use GARANT torque screwdriver TQ No. **211750 size 5.0** with bit No. **674252 size 20IP**.

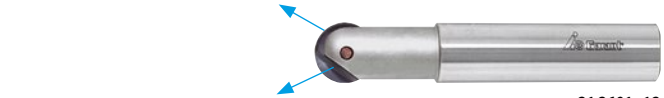


21 2592_12

Ø D	210 **21 2590** Solid carbide copy mill **long Plain shank**	210 **21 2592** Solid carbide copy mill **extra long Plain shank**	L_1 21 2590	L_1 21 2592	L_{tot} 21 2590	L_{tot} 21 2592	Ø d_1	Ø D_s h6	Insert screw
mm			mm	mm	mm	mm	mm	mm	
8	XXX	XXX	25	40	100	150	7.2	8	219870 (7IP; 0.9 Nm)
10	XXX	XXX	35	50	120	150	8.8	10	219871 (8IP; 1.2 Nm)
12	XXX	XXX	35	50	120	160	10.4	12	219872 (10IP; 2.2 Nm)
16	XXX	XXX	40	55	140	175	14	16	219873 (15IP; 3.0 Nm)
20	XXX	XXX	50	75	140	190	17.5	20	219874 (20IP; 5.0 Nm)

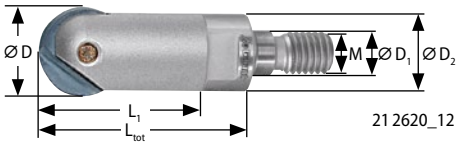


21 2603_12


21 2601_12

21 2606_12

Ø D	210 21 2601	210 21 2603	210 21 2606	L_1		L_2		L_{tot}			Ø d_1	Ø D_s h6	Insert screw
	Copy mill												
	stub	long	extra long	21 2601	21 2603 21 2606	21 2603	21 2606	21 2601	21 2603	21 2606			
mm	Plain shank	Plain shank	Plain shank	mm	mm	mm	mm	mm	mm	mm	mm	mm	
8	XXX	XXX	–	32	18.5	53	–	92	110	–	7.2	12	219870 (7IP; 0.9 Nm)
10	XXX	XXX	XXX	32	21	53	75	92	110	132	8	12	219871 (8IP; 1.2 Nm)
12	XXX	XXX	XXX	32	22	53	85	92	110	145	10	12	219872 (10IP; 2.2 Nm)
16	XXX	XXX	XXX	32	28	63	100	92	123	166	14	16	219873 (15IP; 3.0 Nm)
20	XXX	XXX	XXX	38	34	75	115	104	141	191	17	20	219874 (20IP; 5.0 Nm)
25	XXX	–	–	45	–	–	–	121	–	–	21	25	219875 (25IP; 6.0 Nm)
32	XXX	–	–	100	–	–	–	186	–	–	27	32	219876 (30IP, 6.0 Nm)



21 2620_12

Ø D	210 21 2620	Ø D_1 h6	L_{tot}	Ø D_2	L_1	Mounting thread M	Insert screw
	Copy mill						
mm	with threaded shank	mm	mm	mm	mm		
8	XXX	5.5	23	9.5	13	M5	219870 (7IP; 0.9 Nm)
10	XXX	5.5	23	9.5	23	M5	219871 (8IP; 1.2 Nm)
12	XXX	8.5	25	13.5	16.5	M8	219872 (10IP; 2.2 Nm)
16	XXX	8.5	28	13.5	28	M8	219873 (15IP; 3.0 Nm)
20	XXX	10.5	28	18.5	28	M10	219874 (20IP; 5.0 Nm)
25	XXX	12.5	35	21	35	M12	219875 (25IP; 6.0 Nm)
32	XXX	17	45	30	45	M16	219876 (30IP; 6.0 Nm)

Garant Precision milling inserts for copy mills No. 212590 – 212620

Detailed application values can be found in the GARANT machining handbook No. 110020.

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 50 HRC	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	K						
HU7810 / HU7830	**1400**	**700**	**500**													60				●		●	●
HB4015				**400**	**380**	**360**	**340**	**320**	**240**	**200**				**320**	**300**					●	●	●	●
HB7520				**360**	**300**	**240**	**180**	**120**						180	160		240	●		●		●	●
HB7530				**200**	**180**	**160**	**140**	**120**						140	120		160	●				●	●
HB7705									**280**	**260**	**200**	**160**	**140**	180	160		**240**		●	●		●	●
HB7935														180	160	**60**				●		●	●

■ Maximum concentricity and interchange accuracy: ±0.015 mm.

Helix

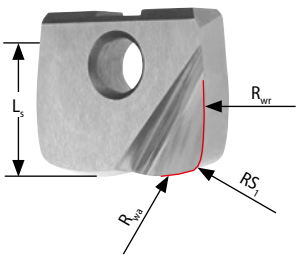
Type		ALU	ST1400	HART	TI		Alu f_z mm	< 1400 N f_z mm	< 60 HRC f_z mm	Ti > 850 N f_z mm
21A 21 2630	Milling insert Ø 8 mm	XXX	XXX	–	XXX	**10**	0.15	0.15	–	0.15
21A 21 2640	Milling insert Ø 10 mm	XXX	XXX	–	XXX	**10**	0.2	0.2	–	0.2
21A 21 2650	Milling insert Ø 12 mm	XXX	XXX	XXX	XXX	**10**	0.2	0.2	0.15	0.2
21A 21 2660	Milling insert Ø 16 mm	XXX	XXX	XXX	XXX	**10**	0.25	0.28	0.2	0.25
21A 21 2665	Milling insert Ø 16 mm **Helix**	–	XXX	–	–	**10**	–	0.25	–	–
21A 21 2670	Milling insert Ø 20 mm	XXX	XXX	XXX	XXX	**10**	0.25	0.28	0.2	0.25
21A 21 2675	Milling insert Ø 20 mm **Helix**	–	XXX	–	–	**10**	–	0.25	–	–
21A 21 2680	Milling insert Ø 25 mm	XXX	XXX	XXX	XXX	**10**	0.3	0.33	0.25	0.3
21A 21 2685	Milling insert Ø 25 mm **Helix**	–	XXX	–	–	**10**	–	0.3	–	–
21A 21 2690	Milling insert Ø 32 mm	XXX	XXX	–	XXX	**5**	0.35	0.36	–	0.35
21A 21 2695	Milling insert Ø 32 mm **Helix**	–	XXX	–	–	**5**	–	0.35	–	–
Grade		HU7810	HB7520	HB7705	HB7935					

■ Maximum concentricity and interchange accuracy: ±0.015 mm.

Type		ALU	ST1400	HART		Corner radius Rmm	Alu f_z mm	< 1400 N f_z mm	< 60 HRC f_z mm
21A 21 2705	Milling insert ∅ 8 mm	XXX	XXX	–	10	0.5	0.15	0.15	–
21A 21 2708		XXX	XXX	–	10	1	0.15	0.15	–
21A 21 2711	Milling insert ∅ 10 mm	XXX	XXX	–	10	0.5	0.2	0.2	–
21A 21 2714		XXX	XXX	–	10	1	0.2	0.2	–
21A 21 2717	Milling insert ∅ 12 mm	XXX	XXX	XXX	10	1	0.25	0.25	0.2
21A 21 2721		XXX	XXX	–	10	2	0.25	0.25	–
21O 21 2724	Milling insert ∅ 16 mm	XXX	XXX	XXX	10	1	0.3	0.3	0.2
21O 21 2727		XXX	XXX	–	10	3	0.3	0.3	–
21A 21 2731	Milling insert ∅ 20 mm	XXX	XXX	XXX	10	1	0.35	0.35	0.25
21A 21 2734		XXX	XXX	–	10	4	0.35	0.35	–
Grade		HU7810	HB7520	HB7705					

■ Radius, concentricity: ± 0.015 mm.
■ Interchange accuracy from insert to insert: ±0.025 mm.

Type		ALU	ST1400		$a_{p\,max}$ mm	Programming radius at $a_{p\,max}$ mm	Alu f_z mm	< 1400 N f_z mm
21A 21 2746	Milling insert ∅ 8 mm **Highfeed**	XXX	XXX	10	0.4	1	0.3	0.4
21A 21 2749	Milling insert ∅ 10 mm **Highfeed**	XXX	XXX	10	0.5	1.4	0.4	0.5
21A 21 2752	Milling insert ∅ 12 mm **Highfeed**	XXX	XXX	10	0.6	1.4	0.5	0.6
21A 21 2756	Milling insert ∅ 16 mm **Highfeed**	XXX	XXX	10	0.8	1.6	0.6	0.8
Grade		HU7830	HB7530					



■ Radius, concentricity and interchange accuracy: ±0.015 mm.

Type		ALU	ST1400	HART		R_{wa} mm	R_{wr} mm	RS_1 mm	L_s mm	Alu f_z mm	< 1400 N f_z mm	< 60 HRC f_z mm
21A 21 2764	Milling insert ∅ 12 mm **stub conical**	XXX	–	–	10	25	50	1	6	0.1	–	–
21A 21 2768		–	XXX	XXX	10	12	24	1	6	–	0.08	0.05
21A 21 2772	Milling insert ∅ 16 mm **stub conical**	XXX	–	–	10	35	70	1	8	0.16	–	–
21A 21 2776		–	XXX	XXX	10	16	32	1	8	–	0.1	0.08
21A 21 2779	Milling insert ∅ 20 mm **stub conical**	XXX	–	–	10	40	80	2	10	0.2	–	–
21A 21 2784		–	XXX	XXX	10	20	40	2	10	–	0.15	0.1
21A 21 2788	Milling insert ∅ 25 mm **stub conical**	XXX	–	–	10	50	100	4	12.5	0.24	–	–
21A 21 2792		–	XXX	XXX	10	25	50	4	12.5	–	0.18	0.12
21A 21 2796	Milling insert ∅ 32 mm **stub conical**	XXX	–	–	5	70	140	4	16	0.3	–	–
21A 21 2799		–	XXX	XXX	5	32	64	4	16	–	0.22	0.15
Grade		HU7810	HB4015	HB7705								

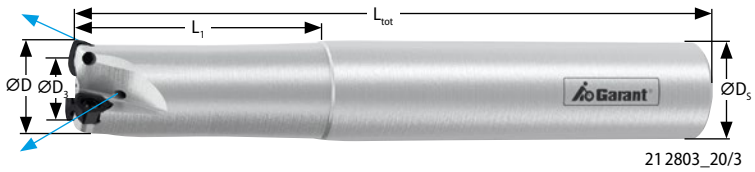
HPC POWER CARD

GARANT Power Q high feed rate indexable milling cutter for XOM.060310 | XDM.090416 | XDM.120516

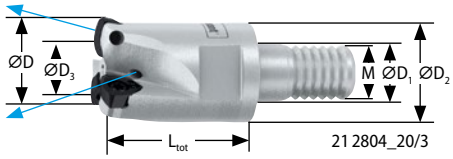
GARANT Power Q high feed rate indexable milling cutter for XOM.060310

Spare part: Pack of insert screws No. 219799 1 (8IP; 1.2Nm).

Note: Use GARANT torque screwdriver TQ No. **211750 size 1.2** with bit No. **674252 size 8IP**.
21 2804 – When working with extensions, always use internal cooling.



21 2803_20/3



21 2804_20/3

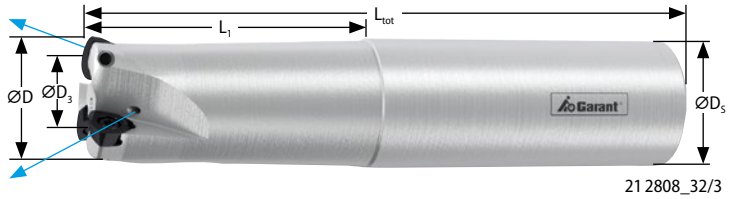
Ø D / number of effective cutting edges Z	21 2802	21 2803	Ø D_3	L_1		L_{tot}		Ø D_s h6	Circular interpolation milling Ø D_{min}	Circular interpolation milling Ø D_{max}	Circular interpolation milling a_p	Ramping angle α_{max}	Ramping length L for α_{max}
	GARANT Power Q high feed rate indexable milling cutter			21 2802	21 2803	21 2802	21 2803						
mm	Weldon shank	Plain shank	mm	mm	mm	mm	mm	mm	mm	mm	mm	degrees	mm
16/2	XXX	XXX	8.5	30	70	80	150	16	19	30	0.3	6.4	8.9
18/2	XXX	XXX	10.5	30	20	80	150	16	23	34	0.3	4.7	12.2
20/3	XXX	XXX	12.5	35	100	85	180	20	27	38	0.3	3.7	15.5
22/3	XXX	XXX	14.5	35	30	85	180	20	31	42	0.3	3	19.1

Ø D / number of effective cutting edges Z	21 2804	Number of cutting edges Z	Ø D_1 h6	Ø D_2	Ø D_3	L_{tot}	Mounting thread M	Circular interpolation milling Ø D_{min}	Circular interpolation milling Ø D_{max}	Circular interpolation milling a_p	Ramping angle α_{max}	Ramping length L for α_{max}
	GARANT Power Q high feed rate indexable milling cutter											
mm	with thread		mm	mm	mm	mm		mm	mm	mm	degrees	mm
16/2	XXX	2	8.5	13	8.5	25	M8	19	30	0.3	6.4	8.9
18/2	XXX	2	8.5	13	10.5	25	M8	23	34	0.3	4.7	12.2
20/3	XXX	3	10.5	18	12.5	28	M10	27	38	0.3	3.7	15.5
22/3	XXX	3	10.5	18	14.5	28	M10	31	42	0.3	3	19.1
25/4	XXX	4	12.5	21	17.5	36	M12	37	48	0.3	2.4	23.8

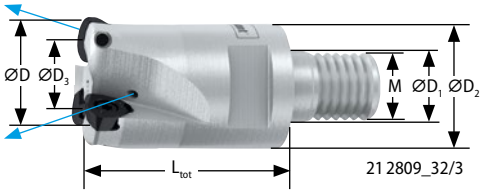
GARANT Power Q high feed rate indexable milling cutter for XDM.090416

Spare part: Pack of insert screws No. 219799 2 (10IP; 2.2Nm).

Note: Use GARANT torque screwdriver TQ No. **211750 size 2.2** with bit No. **674252 size 10IP**.
21 2809 – When working with extensions, always use internal cooling.



21 2808_32/3

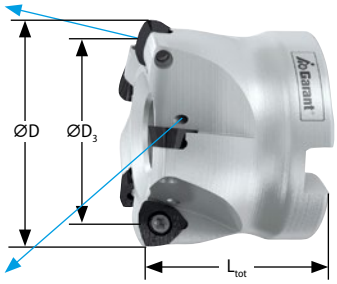


21 2809_32/3

Ø D / number of effective cutting edges Z	21 2807	21 2808	Ø D_3	L_1		L_{tot}		Ø D_s h6	Circular interpolation milling Ø D_{min}	Circular interpolation milling Ø D_{max}	Circular interpolation milling a_p	Ramping angle α_{max}	Ramping length L for α_{max}
	GARANT Power Q high feed rate indexable milling cutter			21 2807	21 2808	21 2807	21 2808						
mm	Weldon shank	Plain shank	mm	mm	mm	mm	mm	mm	mm	mm	mm	degrees	mm
25/2	XXX	XXX	14	39	120	95	200	25	31	47	1	5.5	20.8
28/2	XXX	XXX	17	39	40	95	200	25	37	53	1	4.2	27.2
30/3	XXX	XXX	19	40	120	100	200	32	41	57	1	3.6	31.8
32/3	XXX	XXX	21	40	120	100	200	32	45	61	1	3.2	35.8
35/3	XXX	XXX	24	40	50	100	200	32	51	67	1	2.7	42.5
40/4	XXX	XXX	29	50	50	110	250	32	61	77	1	2.1	54.6

Ø D / number of effective cutting edges Z	21 2809	Number of cutting edges Z	Ø D_1 h6	Ø D_2	Ø D_3	L_{tot}	Mounting thread M	Circular interpolation milling Ø D_{min}	Circular interpolation milling Ø D_{max}	Circular interpolation milling a_p	Ramping angle α_{max}	Ramping length L for α_{max}
	GARANT Power Q high feed rate indexable milling cutter											
mm	with thread		mm	mm	mm	mm		mm	mm	mm	degrees	mm
25/2	XXX	2	12.5	21	14	36	M12	31	47	1	5.5	20.8
28/2	XXX	2	12.5	21	17	36	M12	37	53	1	4.2	27.2
30/3	XXX	3	17	29	19	47	M16	41	57	1	3.6	31.8
32/3	XXX	3	17	29	21	47	M16	45	61	1	3.2	35.8
35/3	XXX	3	17	29	24	47	M16	51	67	1	2.7	42.5
40/4	XXX	4	17	29	29	47	M16	61	77	1	2.1	54.6
42/4	XXX	4	17	29	31	47	M16	65	81	1	1.9	60.2

∅ D / number of effective cutting edges Z	210 21 2812 GARANT Power Q high feed rate indexable milling cutter with bore	$∅ D_3$	L_{tot}	Mounting bore ∅	Circular interpolation milling $∅ D_{min}$	Circular interpolation milling $∅ D_{max}$	Circular interpolation milling a_p	Ramping angle $α_{max}$	Ramping length L for $α_{max}$
mm		mm	mm	mm	mm	mm	mm	degrees	mm
50/5	XXX	39	40	22	81	97	1	1.5	76.3
52/5	XXX	41	40	22	85	101	1	1.4	82

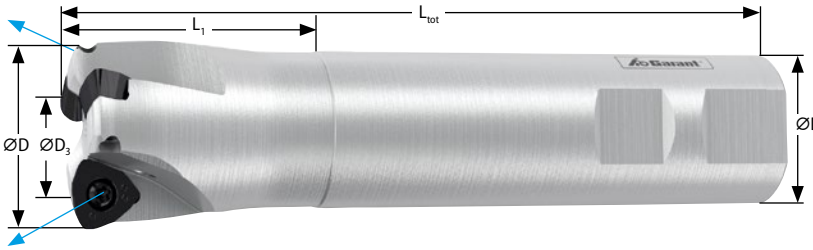


21 2812_52/5

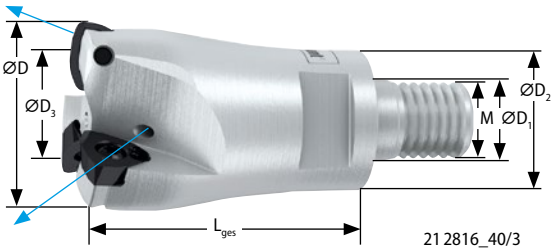
GARANT Power Q high feed rate indexable milling cutter for XDM.120516

Spare part: Pack of insert screws No. 219812 (15IP; 5.0Nm).

Note: Use GARANT torque screwdriver TQ No. **211750 size 5.0** with bit No. **674252 size 15IP**.
21 2816 – When working with extensions, always use internal cooling.



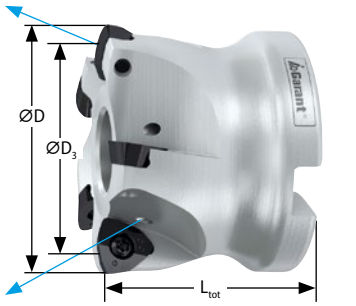
21 2813_40/3



21 2816_40/3

∅ D / number of effective cutting edges Z	210 21 2813 Weldon shank	210 21 2814 Plain shank	$∅ D_3$	L_1 21 2813	L_1 21 2814	L_{tot} 21 2813	L_{tot} 21 2814	$∅ D_5$ h6	Circular interpolation milling $∅ D_{min}$	Circular interpolation milling $∅ D_{max}$	Circular interpolation milling a_p	Ramping angle $α_{max}$	Ramping length L for $α_{max}$
mm	GARANT Power Q high feed rate indexable milling cutter		mm	mm	mm	mm	mm	mm	mm	mm	mm	degrees	mm
30/2	XXX	XXX	14.5	40	120	100	200	32	34	57	1.5	7.97	14.28
32/2	XXX	XXX	16.5	40	120	100	200	32	38	61	1.5	6.54	17.45
35/2	XXX	XXX	19.5	40	50	100	200	32	44	67	1.5	5.15	22.19
40/3	XXX	XXX	24.5	50	50	110	250	32	54	77	1.5	3.8	30.1

∅ D / number of effective cutting edges Z	210 21 2816 GARANT Power Q high feed rate indexable milling cutter with thread	Number of cutting edges Z	$∅ D_1$ h6	$∅ D_2$	$∅ D_3$	L_{tot}	Mounting thread M	Circular interpolation milling $∅ D_{min}$	Circular interpolation milling $∅ D_{max}$	Circular interpolation milling a_p	Ramping angle $α_{max}$	Ramping length L for $α_{max}$
mm			mm	mm	mm	mm		mm	mm	mm	degrees	mm
30/2	XXX	2	17	29	14.5	47	M16	34	57	1.5	7.97	14.28
32/2	XXX	2	17	29	16.5	47	M16	38	61	1.5	6.54	17.45
35/2	XXX	2	17	29	19.5	47	M16	44	67	1.5	5.15	22.19
40/3	XXX	3	17	29	24.5	60	M16	54	77	1.5	3.8	30.1
42/3	XXX	3	17	29	26.5	60	M16	58	81	1.5	3.4	33.9



21 2817_63/5

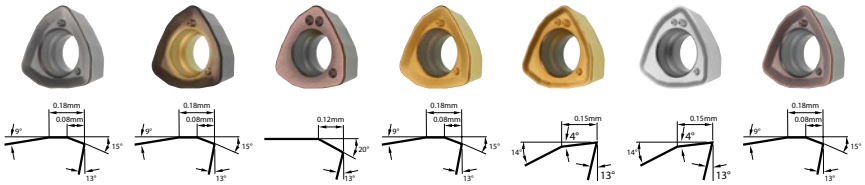
∅ D / number of effective cutting edges Z	210 21 2817 GARANT Power Q high feed rate indexable milling cutter with bore	$∅ D_3$	L_{tot}	Mounting bore ∅	Circular interpolation milling $∅ D_{min}$	Circular interpolation milling $∅ D_{max}$	Circular interpolation milling a_p	Ramping angle $α_{max}$	Ramping length L for $α_{max}$
mm		mm	mm	mm	mm	mm	mm	degrees	mm
50/3	XXX	34.8	40	22	74	97	1.5	2.5	45.8
50/4	XXX	34.8	40	22	74	97	1.5	2.5	45.8
52/3	XXX	36.8	40	22	78	101	1.5	2.33	57.3
52/4	XXX	36.8	40	22	78	101	1.5	2.33	57.3
63/5	XXX	47.8	50	27	100	123	1.5	1.73	66.2
66/5	XXX	50.8	50	27	106	129	1.5	1.62	70.72
80/6	XXX	64.8	50	32	134	157	1.5	1.23	93.15
100/7	XXX	84.8	63	32	174	197	1.5	0.92	124.6

GARANT Power Q milling inserts for high feed rate indexable milling cutters No. 212802 to 212817

Note: Standard application values for $a_e = 0.5...1 \times D$ / $a_{p\ max}$

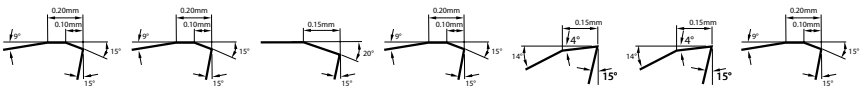
Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 50 HRC	< 55 HRC	< 60 HRC	< 65 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	Inconel®	GG(G)	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	M	M	S	S	K						
21 2819/2860/2887				330	280	240														○	○	●	●
21 2824/2866/2889							240	220												○	○	●	●
21 2830/2877/2891									110	80	50						200					●	●
21 2836/2879/2893													190	170						○	○	●	●
21 2842/2881/2895													180	160	50					●			
21 2852/2883/2897																30				●			
21 2854/2885/2899				280	260	220	200	180					150	130				●		○	○	●	●

Milling inserts XOM.060310



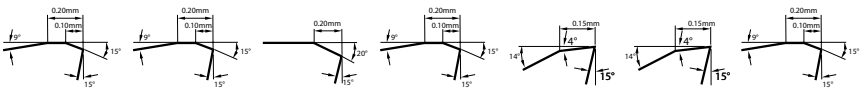
Type			ST900	ST1400	HART	INOX	TI	S	UNI		recommended cutting depth $a_{p\ max}$ mm	maximum cutting depth $a_{p\ max}$ mm	Programming radius at $a_{p\ max}$ mm
21A 21 2819	XOMT060310ZZSR	HB4020	XXX	–	–	–	–	–	–	10	1	1	2
21A 21 2824		HB4030	–	XXX	–	–	–	–	–	10	1	1	2
21A 21 2830	XOMW060310ZZSR	HB4715	–	–	XXX	–	–	–	–	10	0.5	1	2
21A 21 2836	XOMT060310ZZSR	HB4130	–	–	–	XXX	–	–	–	10	0.9	1	2
21A 21 2842		HB4430	–	–	–	–	XXX	–	–	10	0.6	1	2
21A 21 2852	XOMT060310ZZER	HB4420	–	–	–	–	–	XXX	–	10	0.6	1	2
21A 21 2854		HB415	–	–	–	–	–	–	XXX	10	1	1	2
f_z		mm	0.8	0.8	0.4	0.8	0.5	0.4	–				

Milling inserts XDM.090416



Type			ST900	ST1400	HART	INOX	TI	S	UNI		recommended cutting depth $a_{p\ max}$ mm	maximum cutting depth $a_{p\ max}$ mm	Programming radius at $a_{p\ max}$ mm
21A 21 2860	XDMT090416ZDSR	HB4020	XXX	–	–	–	–	–	–	10	1.3	1.5	3
21A 21 2866		HB4030	–	XXX	–	–	–	–	–	10	1.2	1.5	3
21A 21 2877	XDMW090416ZDSR	HB4715	–	–	XXX	–	–	–	–	10	0.7	1.5	3
21A 21 2879	XDMT090416ZDSR	HB4130	–	–	–	XXX	–	–	–	10	1.1	1.5	3
21A 21 2881		HB4430	–	–	–	–	XXX	–	–	10	0.7	1.5	3
21A 21 2883	XDMT090416ZDER	HB4420	–	–	–	–	–	XXX	–	10	0.7	1.5	3
21A 21 2885	XDMT090416ZDSR	HB415	–	–	–	–	–	–	XXX	10	1.2	1.5	3
f_z		mm	1.1	1.1	0.8	1.1	0.6	0.45	–				

Milling inserts XDM.120516



Type			ST900	ST1400	HART	INOX	TI	S	UNI		recommended cutting depth $a_{p\ max}$ mm	maximum cutting depth $a_{p\ max}$ mm	Programming radius at $a_{p\ max}$ mm
21A 21 2887	XDMT120516ZDSR	HB4020	XXX	–	–	–	–	–	–	10	1.5	2	3
21A 21 2889		HB4030	–	XXX	–	–	–	–	–	10	1.3	2	3
21A 21 2891	XDMW120516ZDSR	HB4715	–	–	XXX	–	–	–	–	10	0.8	2	3
21A 21 2893	XDMT120516ZDSR	HB4130	–	–	–	XXX	–	–	–	10	1.2	2	3
21A 21 2895		HB4430	–	–	–	–	XXX	–	–	10	0.9	2	3
21A 21 2897	XDMT120516ZDER	HB4420	–	–	–	–	–	XXX	–	10	0.9	2	3
21A 21 2899	XDMT120516ZDSR	HB415	–	–	–	–	–	–	XXX	10	1.3	2	3
f_z		mm	1.2	1.2	0.9	1.2	0.8	0.5	–				

HPC POWER CARD

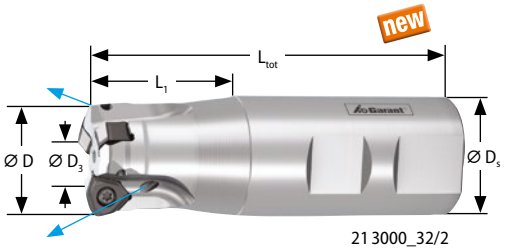
GARANT Power Q Double high feed rate indexable milling cutter for XOMU094812 I XOMU146715

Tool system with **extremely stable embedding for the inserts** for **working to high process reliability.**
Tool geometries to reduce the cutting forces contribute significantly to **reducing the load on the headstock**.

GARANT Power Q Double high feed rate indexable milling cutter for XOMU094812

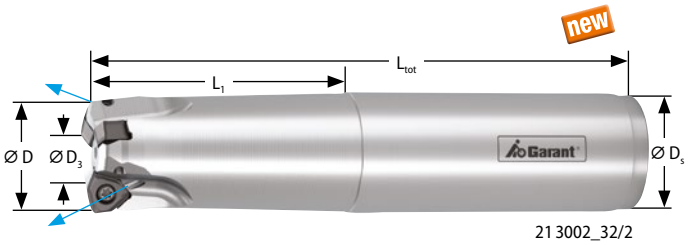
Spare part: Pack of insert screws No. 219799 7 (10IP; 2.8Nm).

Note: Use GARANT torque screwdriver TQ No. **211750 size 2.8** with bit No. **674252 size 10IP**.
21 3004 – When working with extensions, always use internal cooling.



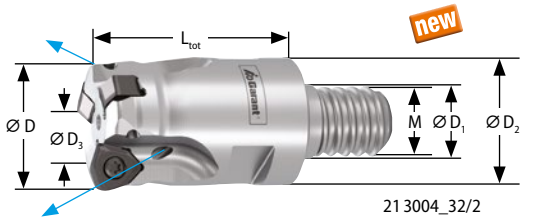
21 3000_32/2

Ø D / number of effective cutting edges Z	210 21 3000 GARANT Power Q Double high feed rate indexable milling cutter Weldon shank	Ø D_3	L_1	L_{tot}	Ø D_s h6	Circular interpolation milling Ø D_{min}	Circular interpolation milling Ø D_{max}	Circular interpolation milling a_p	Ramping angle α_{max}	Ramping length L for α_{max}
mm		mm	mm	mm	mm	mm	mm	mm	degrees	mm
25/2	XXX	13.8	39	95	25	38	48	1.2	4.7	14.6
30/3	XXX	18.8	40	100	32	48	58	1.2	4.8	14.3
32/3	XXX	20.8	40	100	32	52	62	1.2	4.2	16.3
40/4	XXX	28.8	50	110	32	68	78	1.2	2.9	23.7



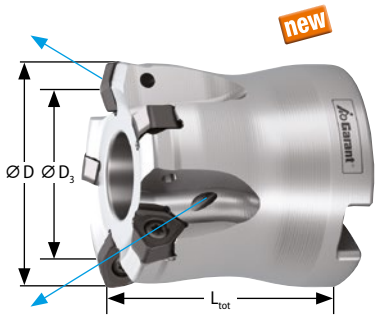
21 3002_32/2

Ø D / number of effective cutting edges Z	210 21 3002 GARANT Power Q Double high feed rate indexable milling cutter Plain shank	Ø D_3	L_1	L_{tot}	Ø D_s h6	Circular interpolation milling Ø D_{min}	Circular interpolation milling Ø D_{max}	Circular interpolation milling a_p	Ramping angle α_{max}	Ramping length L for α_{max}
mm		mm	mm	mm	mm	mm	mm	mm	degrees	mm
25/2	XXX	13.8	70	150	25	38	48	1.2	4.7	14.6
30/3	XXX	18.8	70	150	32	48	58	1.2	4.8	14.3
32/3	XXX	20.8	70	150	32	52	62	1.2	4.2	16.3
35/4	XXX	23.8	70	150	32	58	68	1.2	3.6	19.1
40/4	XXX	28.8	120	200	32	68	78	1.2	2.9	23.7



21 3004_32/2

Ø D / number of effective cutting edges Z	210 21 3004 GARANT Power Q Double high feed rate indexable milling cutter with thread	Ø D_1 h6	Ø D_2	Ø D_3	L_{tot}	Mounting thread M	Circular interpolation milling Ø D_{min}	Circular interpolation milling Ø D_{max}	Circular interpolation milling a_p	Ramping angle α_{max}	Ramping length L for α_{max}
mm		mm	mm	mm	mm		mm	mm	mm	degrees	mm
25/2	XXX	12.5	21	13.8	36	12	38	48	1.2	4.7	14.6
30/3	XXX	17	29	18.8	47	16	48	58	1.2	4.8	14.3
32/3	XXX	17	29	20.8	47	16	52	62	1.2	4.2	16.3
35/4	XXX	17	29	23.8	47	16	58	68	1.2	3.6	19.1
40/4	XXX	17	29	28.8	47	16	68	78	1.2	2.9	23.7
42/4	XXX	17	29	30.8	47	16	72	82	1.2	2.6	26.4



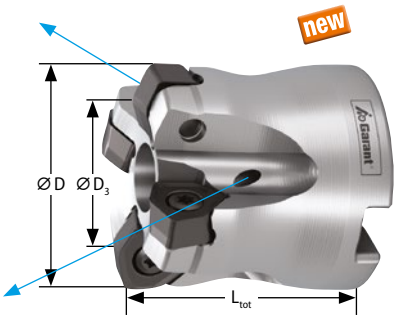
21 3006_50/5

∅ D / number of effective cutting edges Z	210 21 3006 GARANT Power Q Double high feed rate indexable milling cutter	∅ D_3	L_{tot}	Mounting bore ∅	Circular interpolation milling ∅ D_{min}	Circular interpolation milling ∅ D_{max}	Circular interpolation milling a_p	Ramping angle α_{max}	Ramping length L for α_{max}
mm	with bore	mm	mm	mm	mm	mm	mm	degrees	mm
50/5	XXX	39.4	50	22	88	98	1.2	2	34
52/5	XXX	41.4	50	22	92	102	1.2	1.9	36
63/6	XXX	52.4	50	27	114	124	1.2	1.5	46
66/7	XXX	55.4	50	27	120	130	1.2	1.4	49

GARANT Power Q Double high feed rate indexable milling cutter for XOMU146715

Spare part: Pack of insert screws No. 219799 8 (20IP; 5.7Nm).

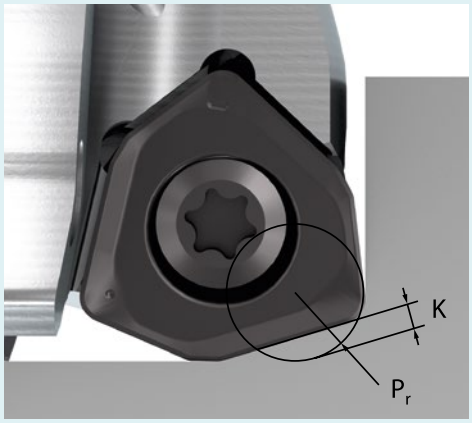
Note: Use GARANT torque screwdriver TQ No. **211750 size 5.7** with bit No. **674252 size 20IP**.



21 3014_50/5

∅ D / number of effective cutting edges Z	210 21 3014 GARANT Power Q Double high feed rate indexable milling cutter	∅ D_3	L_{tot}	Mounting bore ∅	Circular interpolation milling ∅ D_{min}	Circular interpolation milling ∅ D_{max}	Circular interpolation milling a_p	Ramping angle α_{max}	Ramping length L for α_{max}
mm	with bore	mm	mm	mm	mm	mm	mm	degrees	mm
50/4	XXX	34.5	50	22	82	97	2	4.4	26
52/4	XXX	36.5	50	22	86	101	2	4.1	27.9
63/5	XXX	47.5	50	27	108	123	2	3	38.2
66/5	XXX	50.4	50	27	114	129	2	2.8	40.9
80/6	XXX	64.4	50	32	142	157	2	2.1	54.6
100/8	XXX	84.4	63	32	182	197	2	1.5	76.4

Application hints for GARANT Power Q Double



Indexable insert	Programming radius P_r (mm)	Unmachined area K (mm)
XOMU094812 ZZER	2.0	0.91
XOMU146715 ZZER	3.0	1.41

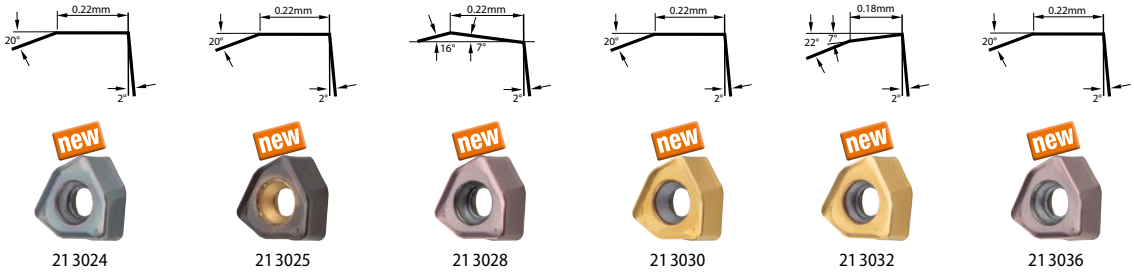
GARANT Power Q Double milling inserts for high feed rate indexable milling cutter No. 213000 to 213014

Innovative indexable insert concept with **double-sided** indexable inserts with 3 cutting edges (2×3 cutting edges).
High-performance tool material for particularly high **cost-effectiveness.**

Note: Standard application values for $a_e = 0.5...1 \times D$ / $a_{p\ max}$

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 50 HRC	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	K						
21 3024/3038				330	280	240													○	○	●	●	
21 3025/3040							240	220											○	○	●	●	
21 3028/3042									110	80	50						200				●	●	
21 3030/3044														190	170				○	○	●	●	
21 3032/3046														180	160	50			●				
21 3036/3050				280	260	220	200	180						150	130			●	○	○	●	●	

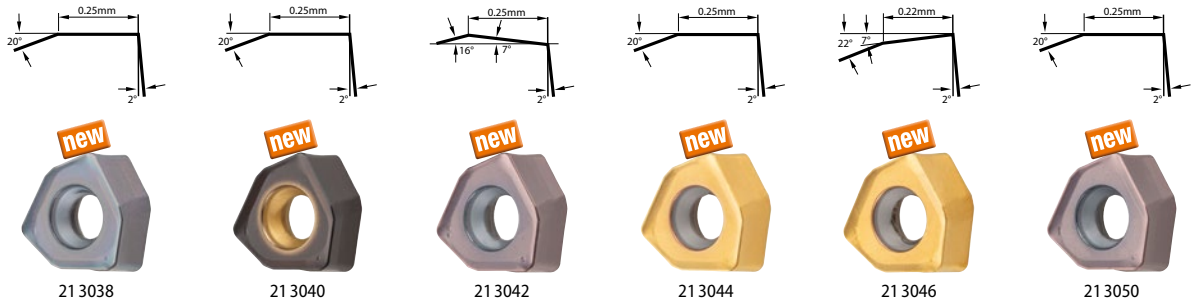
Milling inserts XOMU094812



21 3024 | 21 3025 | 21 3028 | 21 3030 | 21 3032 | 21 3036

Type			ST900	ST1400	HART	INOX	TI	UNI		recommended cutting depth $a_{p\ max}$ mm	maximum cutting depth $a_{p\ max}$ mm	Programming radius at $a_{p\ max}$ mm
21A 21 3024	XDMT090416ZDSR	HB4020	XXX	–	–	–	–	–	10	1.2	1.5	2
21A 21 3025		HB4030	–	XXX	–	–	–	–	10	1	1.5	2
21A 21 3028		HB4715	–	–	XXX	–	–	–	10	0.6	1.5	2
21A 21 3030		HB4130	–	–	–	XXX	–	–	10	0.8	1.5	2
21A 21 3032		HB4430	–	–	–	–	XXX	–	10	0.8	1.5	2
21A 21 3036		HB415	–	–	–	–	–	XXX	10	1	1.5	2
f_z		mm	1.1	1.1	0.8	1.1	0.6	–				

Milling inserts XOMU146715



21 3038 | 21 3040 | 21 3042 | 21 3044 | 21 3046 | 21 3050

Type			ST900	ST1400	HART	INOX	TI	UNI		recommended cutting depth $a_{p\ max}$ mm	maximum cutting depth $a_{p\ max}$ mm	Programming radius at $a_{p\ max}$ mm
21A 21 3038	XOMU146715ZZER	HB4020	XXX	–	–	–	–	–	10	1.5	3	3
21A 21 3040		HB4030	–	XXX	–	–	–	–	10	1.3	3	3
21A 21 3042		HB4715	–	–	XXX	–	–	–	10	0.8	3	3
21A 21 3044		HB4130	–	–	–	XXX	–	–	10	1	3	3
21A 21 3046		HB4430	–	–	–	–	XXX	–	10	0.8	3	3
21A 21 3050		HB415	–	–	–	–	–	XXX	10	1.3	3	3
f_z		mm	1.3	1.3	0.9	1.2	0.8	–				

HPC | POWER CARD

Feedking high feed rate indexable face mill HPC for XD.. 070308 / 09T308 / 120408

Dynamic cutting edge geometry for highest feed rates. Extremely smooth cutting due to **self-stabilising insert bedding. Optimised geometry** for reduced cutting forces, thereby reducing the stress on the main spindle.

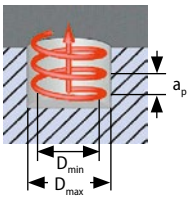
Advantage: Particularly cost-effective due to **exceptionally sturdy 4-edge** inserts.

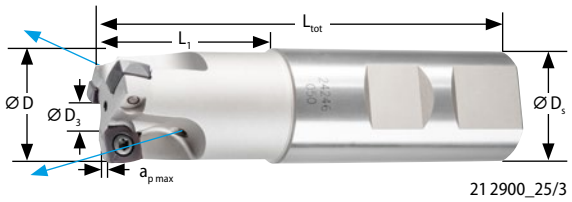
Note:

21 2905 – When working with extensions, always use internal cooling.

Feedking high feed rate indexable face mill for XD.. 070308

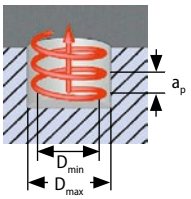
Note: Use GARANT torque screwdriver TQ No. **211750 size 2.2** with bit No. **674252 size 9IP**.

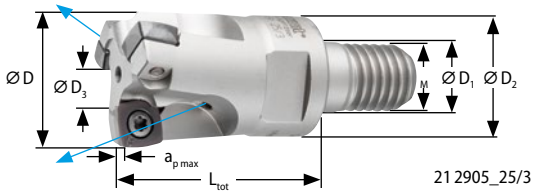




21 2900_25/3

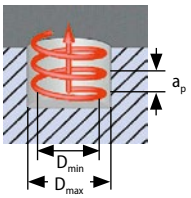
Ø D / number of teeth Z	210 21 2900 FeedKing high feed rate indexable face mill	210 21 2902 FeedKing high feed rate indexable face mill	Ø D_3	$a_{p\,max}$	L_1	L_{tot}	Ø D_s h6	Circular interpolation milling Ø D_{min}	Circular interpolation milling Ø D_{max}	Circular interpolation milling a_p	Ramping angle α_{max}	Ramping length L for α_{max}	suitable indexable insert	Pack of insert screws
mm	**Weldon shank**	**Plain shank**	mm	mm	mm	mm	mm	mm	mm	mm	degrees	mm		
18/2	XXX	–	5.2	0.85	30	80	16	25.8	35	0.85	7.1	6.9	XD.. 070308	219810 (9IP; 2.2 Nm)
18/2L	–	XXX	5.2	0.85	30	160	16	25.8	35	0.85	7.1	6.9	XD.. 070308	219810 (9IP; 2.2 Nm)
20/2	XXX	–	6.9	0.85	35	85	20	29.7	39	0.85	5.2	9.4	XD.. 070308	219810 (9IP; 2.2 Nm)
20/2L	–	XXX	6.9	0.85	35	160	18	29.7	39	0.85	5.2	9.4	XD.. 070308	219810 (9IP; 2.2 Nm)
25/3	XXX	–	11.9	0.85	39	95	25	39.7	49	0.85	2.9	16.9	XD.. 070308	219810 (9IP; 2.2 Nm)
25/3L	–	XXX	11.9	0.85	35	180	20	39.7	49	0.85	2.9	16.9	XD.. 070308	219810 (9IP; 2.2 Nm)
35/5L	–	XXX	21.8	0.85	35	220	32	59.6	66.9	0.85	1.4	34.1	XD.. 070308	219810 (9IP; 2.2 Nm)

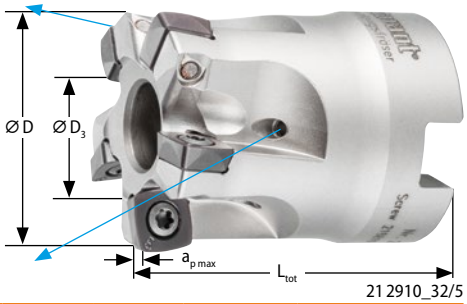




21 2905_25/3

Ø D / number of teeth Z	210 21 2905 FeedKing high feed rate indexable face mill with threaded shank	Ø D_3	$a_{p\,max}$	Ø D_1 h6	L_{tot}	Ø D_2	Mounting thread M	Circular interpolation milling Ø D_{min}	Circular interpolation milling Ø D_{max}	Circular interpolation milling a_p	Ramping angle α_{max}	Ramping length L for α_{max}	suitable indexable insert	Pack of insert screws
mm		mm	mm	mm	mm	mm		mm	mm	mm	degrees	mm		
18/2	XXX	5.2	0.85	10.5	30	17	M10	25.8	35	0.85	7.1	6.9	XD.. 070308	219810 (9IP; 2.2 Nm)
20/2	XXX	6.9	0.85	10.5	30	17.7	M10	29.7	39	0.85	5.2	9.4	XD.. 070308	219810 (9IP; 2.2 Nm)
25/3	XXX	11.9	0.85	12.5	35	20.7	M12	39.7	49	0.85	2.9	16.9	XD.. 070308	219810 (9IP; 2.2 Nm)
32/5	XXX	18.8	0.85	17	42	28.7	M16	53.6	62.9	0.85	1.7	28.7	XD.. 070308	219810 (9IP; 2.2 Nm)
35/5	XXX	21.8	0.85	17	42	28.7	M16	59.6	66.9	0.85	1.4	34.1	XD.. 070308	219810 (9IP; 2.2 Nm)
42/6	XXX	28.4	0.85	17	42	28.7	M16	73.6	82.9	0.85	1.1	43.3	XD.. 070308	219810 (9IP; 2.2 Nm)



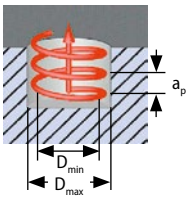


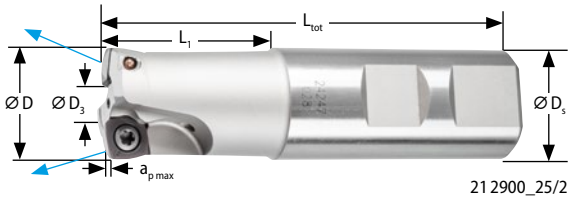
21 2910_32/5

Ø D / number of teeth Z	210 21 2910 FeedKing high feed rate indexable face mill with bore	Ø D_3	$a_{p\,max}$	L_{tot}	Mounting bore Ø	Circular interpolation milling Ø D_{min}	Circular interpolation milling Ø D_{max}	Circular interpolation milling a_p	Ramping angle α_{max}	Ramping length L for α_{max}	suitable indexable insert	Pack of insert screws
mm		mm	mm	mm	mm	mm	mm	mm	degrees	mm		
32/5	XXX	18.5	0.85	40	16	53.6	62.9	0.85	1.7	28.7	XD.. 070308	219810 (9IP; 2.2 Nm)
35/5	XXX	21.8	0.85	40	16	59.6	66.9	0.85	1.4	34.1	XD.. 070308	219810 (9IP; 2.2 Nm)
40/6	XXX	26.8	0.85	40	16	69.6	79	0.85	1.2	41.8	XD.. 070308	219810 (9IP; 2.2 Nm)
50/7	XXX	36.7	0.85	40	22	89.5	98.9	0.85	0.9	57	XD.. 070308	219810 (9IP; 2.2 Nm)
63/9	XXX	49.7	0.85	50	27	115.5	124.9	0.85	0.6	81	XD.. 070308	219810 (9IP; 2.2 Nm)

Feedking high feed rate indexable face mill for XD.. 09T308

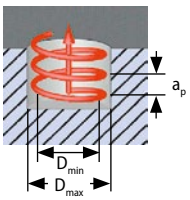
Note: Use GARANT torque screwdriver TQ No. **211750 size 3.8** with bit No. **674252 size 15IP**.

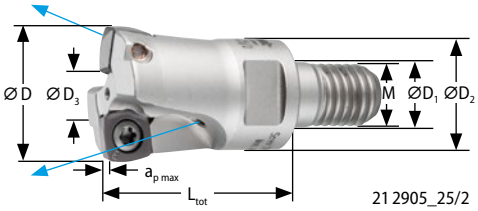




21 2900_25/2

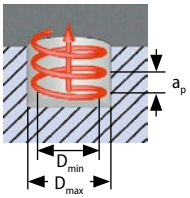
Ø D / number of teeth Z	210 21 2900 FeedKing high feed rate indexable face mill	Ø D_3	$a_{p\,max}$	L_1	L_{tot}	Ø D_s h6	Circular interpolation milling Ø D_{min}	Circular interpolation milling Ø D_{max}	Circular interpolation milling a_p	Ramping angle α_{max}	Ramping length L for α_{max}	suitable indexable insert	Pack of insert screws
mm	**Weldon shank**	mm	mm	mm	mm	mm	mm	mm	mm	degrees	mm		
25/2	XXX	9.6	1.15	39	95	25	38.3	49	1.15	3.7	17.7	XD.. 09T308	219933 (15IP; 3.8 Nm)

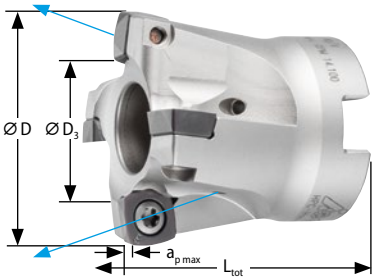




21 2905_25/2

Ø D / number of teeth Z	210 21 2905 FeedKing high feed rate indexable face mill	Ø D_3	$a_{p\,max}$	Ø D_1 h6	L_{tot}	Ø D_2	Mounting thread M	Circular interpolation milling Ø D_{min}	Circular interpolation milling Ø D_{max}	Circular interpolation milling a_p	Ramping angle α_{max}	Ramping length L for α_{max}	suitable indexable insert	Pack of insert screws
mm	**with threaded shank**	mm	mm	mm	mm	mm		mm	mm	mm	degrees	mm		
25/2	XXX	9.6	1.15	12.5	35	20.7	M12	38.3	49	1.15	3.7	17.7	XD.. 09T308	219933 (15IP; 3.8 Nm)
32/3	XXX	16.5	1.15	17	42	28.7	M16	52.3	63	1.15	2	32.5	XD.. 09T308	219933 (15IP; 3.8 Nm)
35/3	XXX	19.5	1.15	17	42	28.7	M16	58.3	69	1.15	1.7	39.2	XD.. 09T308	219933 (15IP; 3.8 Nm)
40/4	XXX	24.5	1.15	17	42	28.7	M16	68.3	79	1.15	1.3	48.9	XD.. 09T308	219933 (15IP; 3.8 Nm)



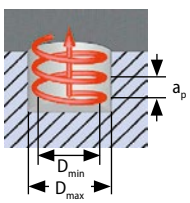


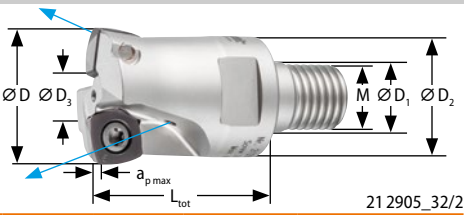
21 2910_40/4

Ø D / number of teeth Z	210 21 2910 FeedKing high feed rate indexable face mill	Ø D_3	$a_{p\,max}$	L_{tot}	Mounting bore Ø	Circular interpolation milling Ø D_{min}	Circular interpolation milling Ø D_{max}	Circular interpolation milling a_p	Ramping angle α_{max}	Ramping length L for α_{max}	suitable indexable insert	Pack of insert screws
mm	**with bore**	mm	mm	mm	mm	mm	mm	mm	degrees	mm		
35/3	XXX	19.5	1.15	40	16	58.3	69	1.15	1.7	39.2	XD.. 09T308	219933 (15IP; 3.8 Nm)
40/4	XXX	24.5	1.15	40	16	68.3	79	1.15	1.3	48.9	XD.. 09T308	219933 (15IP; 3.8 Nm)
42/4	XXX	26.5	1.15	40	16	72.3	83	1.15	1.2	53.3	XD.. 09T308	219933 (15IP; 3.8 Nm)
50/5	XXX	34.5	1.15	40	22	88.3	99	1.15	0.9	71.7	XD.. 09T308	219933 (15IP; 3.8 Nm)
52/5	XXX	35.5	1.15	40	22	92.3	103	1.15	0.9	76.4	XD.. 09T308	219933 (15IP; 3.8 Nm)
63/6	XXX	47.4	1.15	50	27	114.3	125	1.15	0.6	103.6	XD.. 09T308	219933 (15IP; 3.8 Nm)
66/6	XXX	50.4	1.15	50	27	120.2	131	1.15	0.6	111.1	XD.. 09T308	219933 (15IP; 3.8 Nm)
80/7	XXX	64.4	1.15	50	32	148.2	158.9	1.15	0.5	134.3	XD.. 09T308	219933 (15IP; 3.8 Nm)
100/8	XXX	84.4	1.15	50	32	188.2	198.9	1.15	0.4	182.4	XD.. 09T308	219933 (15IP; 3.8 Nm)

Feedking high feed rate indexable face mill for XD.. 120408

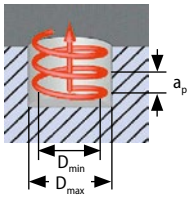
Note: Use GARANT torque screwdriver TQ No. **211750 size 5.7** with bit No. **674252 size 20IP**.

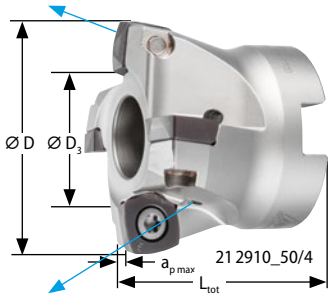




21 2905_32/2

Ø D / number of teeth Z	210 21 2905 FeedKing high feed rate indexable face mill	Ø D_3	$a_{p\,max}$	Ø D_1 h6	L_{tot}	Ø D_2	Mounting thread M	Circular interpolation milling Ø D_{min}	Circular interpolation milling Ø D_{max}	Circular interpolation milling a_p	Ramping angle α_{max}	Ramping length L for α_{max}	suitable indexable insert	Pack of insert screws
mm	**with threaded shank**	mm	mm	mm	mm	mm		mm	mm	mm	degrees	mm		
32/2	XXX	11.4	1.8	17	42	28.7	M16	48.6	63	1.85	3.6	29.4	XD.. 120408	219800 (20IP; 5.7 Nm)
35/3S	XXX	14.2	1.8	17	42	28.7	M16	54.6	69	1.85	2.8	38.5	XD.. 120408	219800 (20IP; 5.7 Nm)
42/4	XXX	21	1.8	17	42	28.7	M16	68.5	83	1.85	2.1	50.1	XD.. 120408	219800 (20IP; 5.7 Nm)





Ø D / number of teeth Z	210 21 2910 FeedKing high feed rate indexable face mill with bore	Ø D_3	$a_{p\,max}$	L_{tot}	Mounting bore Ø	Circular interpolation milling Ø D_{min}	Circular interpolation milling Ø D_{max}	Circular interpolation milling a_p	Ramping angle α_{max}	Ramping length L for α_{max}	suitable indexable insert	Pack of insert screws
mm		mm	mm	mm	mm	mm	mm	mm	degrees	mm		
50/4	XXX	29	1.8	40	22	84.6	99.1	1.85	1.3	80.9	XD.. 120408	219800 (20IP; 5.7 Nm)
52/4	XXX	31.2	1.8	40	22	88.5	103	1.85	1.2	86.8	XD.. 120408	219800 (20IP; 5.7 Nm)
63/5	XXX	42.3	1.8	50	27	110.6	125.1	1.85	0.9	122.21	XD.. 120408	219800 (20IP; 5.7 Nm)
66/5	XXX	45.2	1.8	50	27	116.5	131	1.85	0.8	131.8	XD.. 120408	219800 (20IP; 5.7 Nm)
66/6S	XXX	45.2	1.8	50	27	116.5	131	1.85	0.8	131.8	XD.. 120408	219800 (20IP; 5.7 Nm)
80/6	XXX	59.1	1.8	50	32	144.4	158.9	1.85	0.6	180.2	XD.. 120408	219800 (20IP; 5.7 Nm)
100/7	XXX	79.2	1.8	50	32	184.6	199.1	1.85	0.5	229.7	XD.. 120408	219800 (20IP; 5.7 Nm)

Milling inserts for Feedking HPC high feed rate milling cutters No. 212900 – 212910

Note: Standard application values for $a_e = 0.5 \ldots 1 \times D$ / $a_{p\,max}$

a_e / D	0,5 … 1,0	0,3	0,1
Correction factor f_z	1	1,4	2,2

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 50 HRC	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	TOOLOX® 44 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	H	M	M	S	K					
21 2921/2943/2966	1200	1500	1100																●	○		○	
21 2923/2924/2946 2947/2968/2969				320	270	230													○		●	●	
21 2925/2950/2975							170	150											○	○	●	○	
21 2926/2927/2948 2949/2972/2973							180	160											○	○	●	●	
21 2928/2929/2951 2952/2974/2978														140					○		●		
21 2930/2955/2980									120	110	90	70	60	140					○	○	●	○	
21 2932/2933/2954 2956/2977/2982									100	80	50								○		●		
21 2934/2936/2959 2961/2979/2984															150	110	45		○		●		
21 2937/2962/2987															150	110	45		○		●	○	
21 2941/2964/2991																		600	●		●		

Milling inserts XD..070308

Note:
21 2941 – Do not tighten insert screw No. 219810 to more than 1.5 Nm!

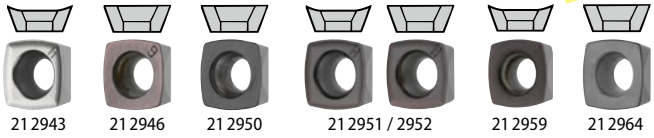
KU7710 = ceramic

Type			ALU	ST900	ST1400	HART	INOX	GGG		$a_{p\,max}$ mm	f_z mm
21A 21 2921	XDLT 070308 ER	HU7810	XXX	–	–	–	–	–	10	0.85	0.65
21A 21 2923	XDLW 070308 SR	HB7530	–	XXX	–	–	–	–	10	0.85	0.72
21A 21 2924	XDPW 070308 SR	HB7530	–	XXX	–	–	–	–	10	0.85	0.72
21A 21 2925	XDLW 070308 TN	HB7720	–	–	XXX	–	–	–	10	0.85	0.65
21A 21 2926	XDLW 070308 SR	HB7525	–	–	XXX	–	–	–	10	0.85	0.65
21A 21 2927	XDPW 070308 SR	HB7525	–	–	XXX	–	–	–	10	0.85	0.65
21A 21 2928	XDLT 070308 ER	HB7720	–	–	–	XXX	–	–	10	0.85	0.36
21A 21 2929	XDPT 070308 ER	HB7720	–	–	–	XXX	–	–	10	0.85	0.36
21A 21 2930	XDLW 070308 TN	HB7705	–	–	–	XXX	–	–	10	0.85	0.36
21A 21 2932	XDLW 070308 ER	HB7720	–	–	–	XXX	–	–	10	0.85	0.36
21A 21 2933	XDPW 070308 SR	HB7720	–	–	–	XXX	–	–	10	0.85	0.36
21A 21 2934	XDLT 070308 ER	HB7635	–	–	–	–	XXX	–	10	0.85	0.72
21A 21 2936	XDPT 070308 ER	HB7635	–	–	–	–	XXX	–	10	0.85	0.72
21A 21 2937	XDLT 070308 TN	HB7535	–	–	–	–	XXX	–	10	0.85	0.72
21H 21 2941	XDLW 070308 TN	KU7710	–	–	–	–	–	XXX	10	0.6	0.36
Programming radius at $a_{p\,max}$		mm	1.58								

Milling inserts XD..09T308

Note:
21 2964 – Do not tighten insert screw No. 219933 to more than 2.2 Nm!

KU7710 = ceramic



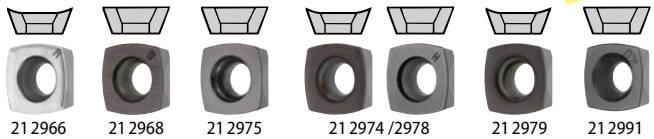
21 2943 | 21 2946 | 21 2950 | 21 2951 / 2952 | 21 2959 | 21 2964

Type			ALU	ST900	ST1400	HART	INOX	GGG		$a_{p\,max}$ mm	f_z mm
21A 21 2943	XDLT 09T308 ER	HU7810	XXX	–	–	–	–	–	10	1.15	0.79
21A 21 2946	XDLW 09T308 SR	HB7530	–	XXX	–	–	–	–	10	1.15	0.86
21A 21 2947	XDPW 09T308 SR	HB7530	–	XXX	–	–	–	–	10	1.15	0.86
21A 21 2950	XDLW 09T308 TN	HB7720	–	–	XXX	–	–	–	10	1.15	0.79
21A 21 2948	XDLW 09T308 SR	HB7525	–	–	XXX	–	–	–	10	1.15	0.79
21A 21 2949	XDPW 09T308 SR	HB7525	–	–	XXX	–	–	–	10	1.15	0.79
21A 21 2951	XDLT 09T308 ER	HB7720	–	–	–	XXX	–	–	10	1.15	0.43
21A 21 2952	XDPT 09T308 ER	HB7720	–	–	–	XXX	–	–	10	1.15	0.43
21A 21 2955	XDLW 09T308 TN	HB7705	–	–	–	XXX	–	–	10	1.15	0.43
21A 21 2954	XDLW 09T308 ER	HB7720	–	–	–	XXX	–	–	10	1.15	0.43
21A 21 2956	XDPW 09T308 SR	HB7720	–	–	–	XXX	–	–	10	1.15	0.43
21A 21 2959	XDLT 09T308 ER	HB7635	–	–	–	–	XXX	–	10	1.15	0.86
21A 21 2961	XDPT 09T308 ER	HB7635	–	–	–	–	XXX	–	10	1.15	0.86
21A 21 2962	XDLT 09T308 TN	HB7535	–	–	–	–	XXX	–	10	1.15	0.86
21H 21 2964	XDLW 09T308 TN	KU7710	–	–	–	–	–	XXX	10	0.8	0.43
Programming radius at $a_{p\,max}$		mm	1.99								

Milling inserts XD..120408

Note:
21 2991 – Do not tighten insert screw No. 219800 to more than 3.8 Nm!

KU7710 = ceramic



21 2966 | 21 2968 | 21 2975 | 21 2974 /2978 | 21 2979 | 21 2991

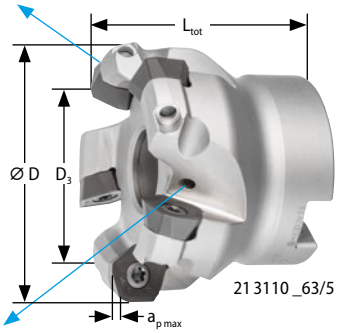
Type			ALU	ST900	ST1400	HART	INOX	GGG		$a_{p\,max}$ mm	f_z mm
21A 21 2966	XDLT 120408 ER	HU7810	XXX	–	–	–	–	–	10	1.8	1
21A 21 2968	XDLW 120408 SR	HB7530	–	XXX	–	–	–	–	10	1.8	1.07
21A 21 2969	XDPW 120408 SR	HB7530	–	XXX	–	–	–	–	10	1.8	1.07
21A 21 2975	XDLW 120408 TN	HB7720	–	–	XXX	–	–	–	10	1.8	1
21A 21 2972	XDLW 120408 SR	HB7525	–	–	XXX	–	–	–	10	1.8	1
25A 21 2973	XDPW 120408 SR	HB7525	–	–	XXX	–	–	–	10	1.8	1
21A 21 2974	XDLT 120408 ER	HB7720	–	–	–	XXX	–	–	10	1.8	0.57
21A 21 2978	XDPT 120408 ER	HB7720	–	–	–	XXX	–	–	10	1.8	0.57
21A 21 2980	XDLW 120408 TN	HB7705	–	–	–	XXX	–	–	10	1.8	0.57
21A 21 2977	XDLW 120408 ER	HB7720	–	–	–	XXX	–	–	10	1.8	0.57
21A 21 2982	XDPW 120408 SR	HB7720	–	–	–	XXX	–	–	10	1.8	0.57
21A 21 2979	XDLT 120408 ER	HB7635	–	–	–	–	XXX	–	10	1.8	1.07
21A 21 2984	XDPT 120408 ER	HB7635	–	–	–	–	XXX	–	10	1.8	1.07
21A 21 2987	XDLT 120408 TN	HB7535	–	–	–	–	XXX	–	10	1.8	1.07
21H 21 2991	XDLW 120408 TN	KU7710	–	–	–	–	–	XXX	10	1	0.57
Programming radius at $a_{p\,max}$		mm	2.6								

POWER CARD

Hi5 high feed rate indexable face mills for milling inserts POMX 10T5..

Description: Powerful and smooth-cutting high feed rate indexable face mill.
Particularly smooth-running, due to unequal spacing of the teeth.
Can also be used for semi-finishing.
Cost-efficiency due to 5-edge inserts.

Note: Use GARANT torque screwdriver TQ No. **211750 size 5.7** with bit No. **674252 size 20IP**.



Ø D / number of teeth Z	210 21 3110 Hi5 high feed rate indexable face mill with bore	Ø D_3	$a_{p\,max}$	L_{tot}	Mounting bore Ø	Pack of insert screws
mm		mm	mm	mm	mm	
42/3	XXX	22.7	2.2	50	16	219889 (20IP; 5.7 Nm)
50/4	XXX	30.6	2.2	40	22	219889 (20IP; 5.7 Nm)
52/4	XXX	32.6	2.2	40	22	219889 (20IP; 5.7 Nm)
63/5	XXX	43.6	2.2	50	27	219889 (20IP; 5.7 Nm)
66/5	XXX	46.6	2.2	50	27	219889 (20IP; 5.7 Nm)
80/6	XXX	60.6	2.2	50	32	219889 (20IP; 5.7 Nm)
100/8	XXX	80.78	2.2	50	32	219889 (20IP; 5,7 Nm)
125/10	XXX	105.85	2.2	63	40	219889 (20IP; 5,7 Nm)

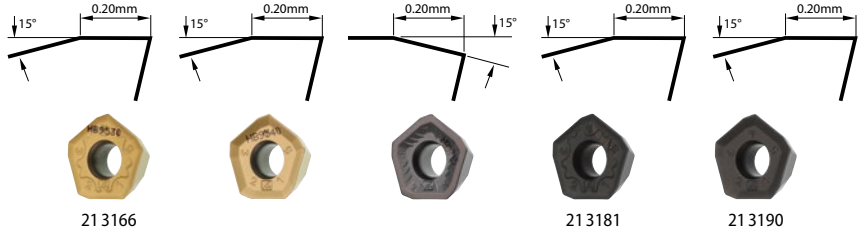
Milling inserts for Hi5 high feed rate indexable face mill No. 213110

Sturdy insert version (thickness = 5.9 mm).
Positive geometry for high feed rates.
Flat cutting edge length: 2 mm for high surface quality.
Special cost-effectiveness due to 5 cutting edges.
21 3184/3193 – Preferred solution for difficult applications (interrupted cutting).

Note: Standard application values for a_e = 0.5 ... 1×D / a_p max = 2.2 mm.

a_e / D	0.5 . . . 1.0	0.3	0.1
Correction factor f_z	1	1.4	2.2

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	K						
21 3166				350	300	280													○				●
21 3169				420	400	380																●	●
21 3172/3193					360	310	260	200						170	130			●				●	●
21 3178									50	40	35	30					300					●	●
21 3181/3190				360	320	280								180	150	80		●	○				●
21 3184														150	120	70			○				●



21 3166 21 3181 21 3190

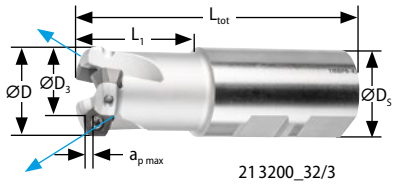
Type			ST900	ST1400	HART	INOX	UNI	
21A 21 3166	POMX 10T5ZEER M	HB9530	XXX	–	–	–	–	10
21A 21 3169		HB9525	XXX	–	–	–	–	10
21A 21 3172		HB9540	–	XXX	–	–	–	10
21A 21 3178	POMX 10T5ZESR R	HB9715	–	–	XXX	–	–	10
21A 21 3181	POMX 10T5ZEER M	HB9640	–	–	–	XXX	–	10
21A 21 3184		HB9645	–	–	–	XXX	–	10
21A 21 3190	POMX 10T5ZEER U	HB9640	–	–	–	–	XXX	10
21A 21 3193		HB9540	–	–	–	–	XXX	10
Programming radius at $a_{p\,max}$		mm			4.8			
f_z		mm	1.1	1	0.6	1	–	

POWER CARD

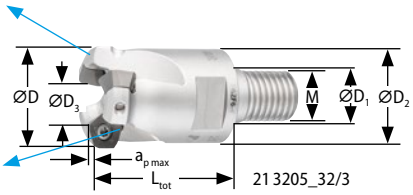
Hi5 high feed rate indexable face mills for milling inserts POMX 0704..

Particularly smooth-running, due to unequal spacing of the teeth.

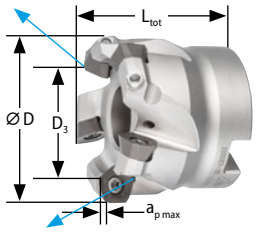
Note: Use GARANT torque screwdriver TQ No. **211750 size 2.2** with bit No. **674252 size 10IP**.



21 3200_32/3



21 3205_32/3



21 3210_50/5

Ø D / number of teeth Z	210 21 3200 Hi5 high feed rate indexable face mill	Ø D_3	$a_{p\,max}$	L_1	L_{tot}	Ø D_5 h6	Pack of insert screws
mm	**Weldon shank**	mm	mm	mm	mm	mm	
25/2	XXX	10.6	1.4	36	92	25	219883 (10IP; 2.2 Nm)
32/3	XXX	17.6	1.4	40	100	32	219884 (10IP; 2.2 Nm)
40/4	XXX	25.6	1.4	50	110	32	219884 (10IP; 2.2 Nm)

Ø D / number of teeth Z	210 21 3205 Hi5 high feed rate indexable face mill	Ø D_3	$a_{p\,max}$	Ø D_1 h6	L_{tot}	Ø D_2	Mounting thread M	Pack of insert screws
mm	**with thread**	mm	mm	mm	mm	mm		
25/2	XXX	10.6	1.4	12.5	35	21	M12	219883 (10IP; 2.2 Nm)
32/3	XXX	17.6	1.4	17	43	29	M16	219884 (10IP; 2.2 Nm)
40/4	XXX	25.6	1.4	17	43	29	M16	219884 (10IP; 2.2 Nm)

Ø D / number of teeth Z	210 21 3210 Hi5 high feed rate indexable face mill	Ø D_3	$a_{p\,max}$	L_{tot}	Mounting bore Ø	Pack of insert screws
mm	**with bore**	mm	mm	mm	mm	
40/4	XXX	25.6	1.4	40	16	219884 (10IP; 2.2 Nm)
50/5	XXX	35.6	1.4	40	22	219884 (10IP; 2.2 Nm)
52/5	XXX	37.6	1.4	40	22	219884 (10IP; 2.2 Nm)
63/6	XXX	48.6	1.4	50	27	219884 (10IP; 2.2 Nm)
66/6	XXX	51.6	1.4	50	27	219884 (10IP; 2.2 Nm)

Milling inserts for Hi5 high feed rate indexable face mills No. 213200 – 213210

Flat cutting edge length: 1.5 mm, for high surface quality.

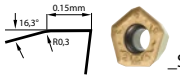
21 3137/3144 – Preferred solution for difficult applications (interrupted cutting).

Note: Standard application values for a_e = 0.5 ... 1×D / a_p max = 1.4 mm.

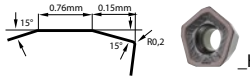
a_e / D	0.5 . . . 1.0	0.3	0.1
Correction factor f_z	1	1.4	2.2

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	K						
21 3122				350	300	280														○			●
21 3125				420	400	380																●	●
21 3128/3144					360	310	260	200						170	130			●				●	●
21 3131									50	40	35	30					300					●	●
21 3134/3141				360	320	280								180	150	80		●		○			●
21 3137														150	120	70				○			●

_ST900

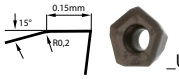


_ST1400



_HART

_INOX



_UNI

Type			ST900	ST1400	HART	INOX	UNI	
21A 21 3122	POMX 0704ZEER M	HB9530	XXX	–	–	–	–	10
21A 21 3125		HB9525	XXX	–	–	–	–	10
21A 21 3128		HB9540	–	XXX	–	–	–	10
21A 21 3131	POMX 0704ZESR R	HB9715	–	–	XXX	–	–	10
21A 21 3134	POMX 0704ZEER M	HB9640	–	–	–	XXX	–	10
21A 21 3137		HB9645	–	–	–	XXX	–	10
21A 21 3141	POMX 0704ZEER U	HB9640	–	–	–	–	XXX	10
21A 21 3144		HB9540	–	–	–	–	XXX	10
Programming radius at $a_{p\,max}$		mm			3.61			
f_z		mm	1	0.9	0.5	0.9	–	

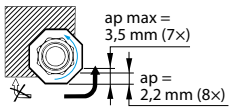
43° | POWER CARD

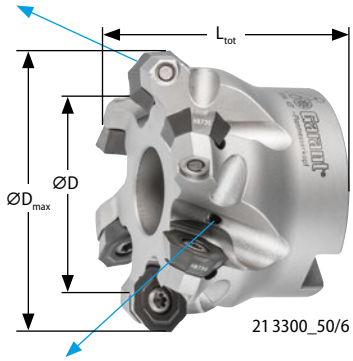
43° Octo indexable face mills for milling inserts OF.. 050405

43° indexable face mill with up to 8 edges per milling insert.

Application: Very good surface finishes are obtained due to the positive geometry. Smooth-cutting face mills.

Note: To use all **8 cutting edges**, the insert **always has to be turned in the indicated direction.**
Standard application values for a_e = 0.5 ... 1×D.
$a_{p\,max}$ 2.2 mm: **(Z = 8),**
$a_{p\,max}$ 3.5 mm: **(Z = 7).**
Use GARANT torque screwdriver TQ No. **211750 size 3.8** with bit No. **674252 size 15IP**.





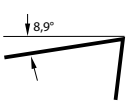
a_e / D	0,5 . . . 1,0	0,3	0,1
Correction factor f_z	1	1,4	2,2

∅ D / number of teeth Z	210 21 3300 Indexable face mill 43° Octo with bore	∅ D_{max}	L_{tot}	Mounting bore ∅	Pack of insert screws
mm		mm	mm	mm	
32/3	XXX	41	40	16	219808 (15IP; 3.8 Nm)
40/5	XXX	49	40	16	219808 (15IP; 3.8 Nm)
50/4	XXX	59	40	22	219808 (15IP; 3.8 Nm)
50/6	XXX	59	40	22	219808 (15IP; 3.8 Nm)
63/5	XXX	72	40	22	219808 (15IP; 3.8 Nm)
63/7	XXX	72	40	22	219808 (15IP; 3.8 Nm)
80/6	XXX	89	50	27	219808 (15IP; 3.8 Nm)
100/7	XXX	109	50	32	219808 (15IP; 3.8 Nm)
125/8	XXX	134	63	40	219808 (15IP; 3.8 Nm)

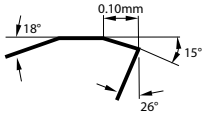
Milling inserts OF.. 050405 for indexable face mill No. 213300

Extremely strong inserts to the standard ISO dimensions, precision sintered and ground. Micro-grain substrates ensure high toughness and good wear resistance.

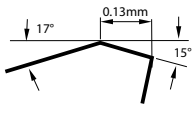
Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	CuZn	Graphite GRP CRP	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	M	M	S	K	N	N						
213320				**280**	**260**	**200**	135	110				160	145		170					○			●	
213321				**350**	**240**	**210**	200	180				220	140		160				●	●	●	●	●	
213322						**250**	**180**	150											○				●	
213324				275	250	190	**160**	**130**				160	110		140					●			○	
213325				390	275	245	**230**	**210**				280	180		180				●	○	○	●	●	
213340	795	720	645	260	185	150	140	135				**190**	**120**	45	120				○	●	○			
213345				**300**	**210**	**180**	170	160				**210**	130	45	140			●	●	●	●	●	●	○
213347				**250**	**240**	**210**	140	110				**200**	150		130			●		○		●	●	
213358	**1350**	**1150**	**700**													**690**				●	○	○		
213361	**1350**	**1350**	**950**														●			●		○		



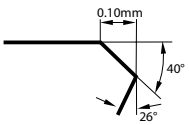
21 3358



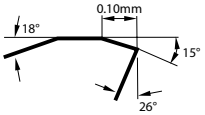
21 3321



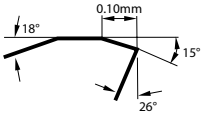
21 3322



21 3325



21 3340



21 3347

Type			ALU	ST900	ST1100	ST1400	INOX	UNI	
21A 21 3358	Garant	OFMT 050405 TN	HU7815	XXX	–	–	–	–	–	10
21B 21 3361	Garant	OFMT 050405 **diamond-coated**	HB7810	XXX	–	–	–	–	–	1
21A 21 3320	Garant		HB7525	–	XXX	–	–	–	–	10
21A 21 3321	Garant	OFMT 050405 TR	HB7525	–	XXX	–	–	–	–	10
21A 21 3322	Garant		HB8520	–	–	XXX	–	–	–	10
21A 21 3324	Garant	OFEW 050405 TR	HB7520	–	–	–	XXX	–	–	10
21A 21 3325	Garant	OFEW 050405 TN	HB7515	–	–	–	XXX	–	–	10
21A 21 3340	Garant	OFMT 050405 TR	HB7635	–	–	–	–	XXX	–	10
21A 21 3345	Garant	XDHW 050405	HB735	–	–	–	–	–	XXX	10
22A 21 3347	HOLEX	OFMT 050405 TR	HBX20	–	–	–	–	–	XXX	10
f_z			mm	0.18	0.17	0.15	0.14	0.14	–	

45° ≠ POWER CARD Garant

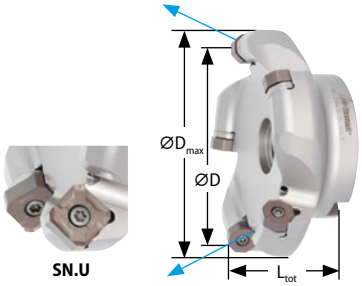
TwinCut high-performance indexable face mills 45°, wide, normal and close pitch

From ∅ 160 mm for arbors to DIN 2079, with 4 additional attachment holes and without internal cooling.

Application: With double-sided 8-edge inserts (ON.U) or 4-edge inserts (SN.U).

Spare part: Shim No. 219897 for use with both types of indexable insert.

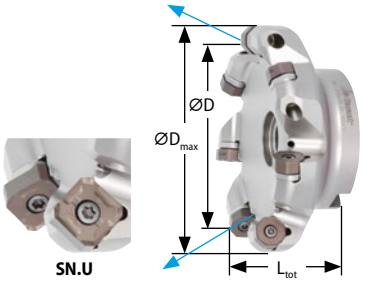
Note: Use GARANT torque screwdriver TQ No. **211750 size 3.8** with bit No. **674252 size 15IP**. Do not mix different types of insert ON.U and SN.U.



SN.U

21 3410_100/5 **ON.U**

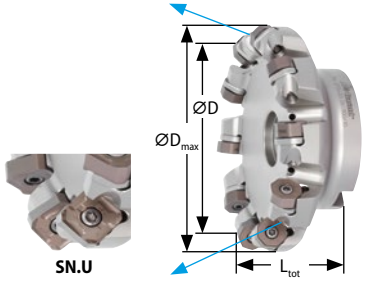
∅ D / number of teeth Z	210 21 3410 TwinCut indexable face mill 45° wide pitch with bore	∅ D_{max} ON.U	∅ D_{max} SN.U	L_{tot} ON.U	L_{tot} SN.U	Mounting bore ∅	Pack of insert screws	Shim	Clamp screw for shim
mm		mm	mm	mm	mm	mm			
50/3	XXX	61.8	65.2	38.3	40	22	219898 (15IP; 3.8 Nm)	219897	219899
63/4	XXX	74.8	78.2	38.3	40	22	219898 (15IP; 3.8 Nm)	219897	219899
80/4	XXX	91.8	95.2	48.3	50	27	219898 (15IP; 3.8 Nm)	219897	219899
100/5	XXX	111.8	115.2	48.3	50	32	219898 (15IP; 3.8 Nm)	219897	219899
125/6	XXX	136.8	140.2	61.3	63	40	219898 (15IP; 3.8 Nm)	219897	219899
160/7	XXX	171.8	175.2	61.3	63	40	219898 (15IP; 3.8 Nm)	219897	219899
200/8	XXX	211.8	215.2	61.3	63	60	219898 (15IP; 3.8 Nm)	219897	219899
250/10	XXX	261.8	265.2	61.3	63	60	219898 (15IP; 3.8 Nm)	219897	219899



SN.U

21 3415_100/7 **ON.U**

∅ D / number of teeth Z	210 21 3415 TwinCut indexable face mill 45° normal pitch with bore	∅ D_{max} ON.U	∅ D_{max} SN.U	L_{tot} ON.U	L_{tot} SN.U	Mounting bore ∅	Pack of insert screws	Shim	Clamp screw for shim
mm		mm	mm	mm	mm	mm			
50/4	XXX	61.8	65.2	38.3	40	22	219898 (15IP; 3.8 Nm)	219897	219899
63/5	XXX	74.8	78.2	38.3	40	22	219898 (15IP; 3.8 Nm)	219897	219899
80/6	XXX	91.8	95.2	48.3	50	27	219898 (15IP; 3.8 Nm)	219897	219899
100/7	XXX	111.8	115.2	48.3	50	32	219898 (15IP; 3.8 Nm)	219897	219899
125/8	XXX	136.8	140.2	61.3	63	40	219898 (15IP; 3.8 Nm)	219897	219899
160/10	XXX	171.8	175.2	61.3	63	40	219898 (15IP; 3.8 Nm)	219897	219899
200/12	XXX	211.8	215.2	61.3	63	60	219898 (15IP; 3.8 Nm)	219897	219899
250/14	XXX	261.8	265.2	61.3	63	60	219898 (15IP; 3.8 Nm)	219897	219899



SN.U

21 3420_100/10 **ON.U**

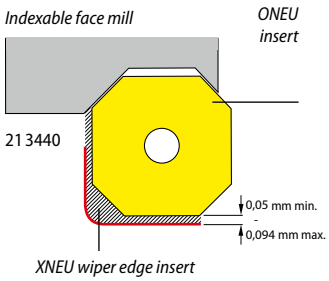
∅ D / number of teeth Z	210 21 3420 TwinCut indexable face mill 45° close pitch with bore	∅ D_{max} ON.U	∅ D_{max} SN.U	L_{tot} ON.U	L_{tot} SN.U	Mounting bore ∅	Pack of insert screws	Shim	Clamp screw for shim
mm		mm	mm	mm	mm	mm			
40/3	XXX	51.8	55.2	38.3	40	16	219898 (15IP; 3.8 Nm)	219897	219899
50/5	XXX	61.8	65.2	38.3	40	22	219898 (15IP; 3.8 Nm)	219897	219899
63/6	XXX	74.8	78.2	38.3	40	22	219898 (15IP; 3.8 Nm)	219897	219899
80/8	XXX	91.8	95.2	48.3	50	27	219898 (15IP; 3.8 Nm)	219897	219899
100/10	XXX	111.8	115.2	48.3	50	32	219898 (15IP; 3.8 Nm)	219897	219899
125/12	XXX	136.8	140.2	61.3	63	40	219898 (15IP; 3.8 Nm)	219897	219899
160/14	XXX	171.8	175.2	61.3	63	40	219898 (15IP; 3.8 Nm)	219897	219899
200/16	XXX	211.8	215.2	61.3	63	60	219898 (15IP; 3.8 Nm)	219897	219899
250/18	XXX	261.8	265.2	61.3	63	60	219898 (15IP; 3.8 Nm)	219897	219899

Garant Milling inserts ON.U, SN.U and XNEU for TwinCut indexable face mills No. 213410 - 213420

21 3424–3438 – Double-sided with 2×8 cutting edges.
21 3440/3468/3470 –Wiper edge insert with 1 cutting edge.
21 3444–3466 – Double-sided with 2×4 cutting edges.

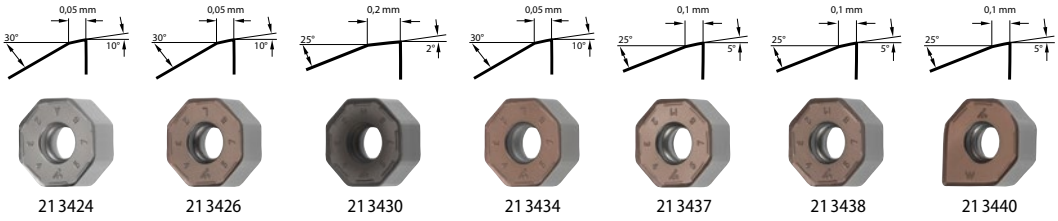
Recommendation: For the best surface quality choose insert tolerance E in combination with wiper edge insert(s).

Note: Standard application values for $a_e = 0.5 \ldots 1 \times D / a_{p\,max}$
21 3440 – Length of the flat chamfer 7.6 mm.
21 3468/3470 – Length of the wiper flat 8 mm.



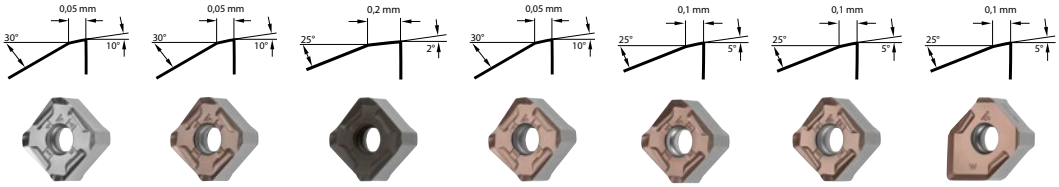
a_e / D	0.5 ... 1.0	0.3	0.1
Correction factor f_z	1.0	1.4	2.2

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	Uni
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	K	
21 3424/3444	750	750	500															
21 3426/3446				300	280	260												
21 3430/3452							220	200										
21 3432							170	150										
21 3433–21 3435/ 3458/3460														200	160			
21 3437/3464																	200	
21 3438/3466				280	260	240								140	120			●



21 3424 21 3426 21 3430 21 3434 21 3437 21 3438 21 3440

Type			ALU	ST900	ST1400	INOX	GG	UNI		$a_{p\,max}$ mm
21A 21 3424	ONEU 05T6 ANER	HU7810	XXX	–	–	–	–	–	10	3
21A 21 3426	ONMU 05T6 ANER	HB7520	–	XXX	–	–	–	–	10	3
21A 21 3430		HB7510	–	–	XXX	–	–	–	10	3
21A 21 3432	ONEU 05T6 ANER	HB7520	–	–	XXX	–	–	–	10	3
21A 21 3434	ONMU 05T6 ANER	HB7630	–	–	–	XXX	–	–	10	3
21A 21 3433	ONEU 05T6 ANER	HB7630	–	–	–	XXX	–	–	10	3
21A 21 3435	ONMU 05T6 ANER	HB8630	–	–	–	XXX	–	–	10	3
21A 21 3437		HB7730	–	–	–	–	XXX	–	10	3
21A 21 3438		HB7520	–	–	–	–	–	XXX	10	3
21A 21 3440	XNEU 05T6 ANEN-W **Wiper edge insert**	HB7730	–	–	–	–	–	XXX	10	3
f_z		mm	0.23	0.3	0.25	0.2	0.3	–		

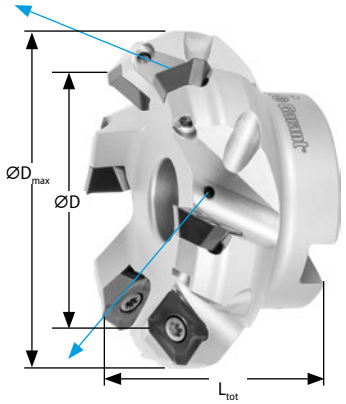


21 3444 21 3446 21 3452 21 3458 21 3464 21 3466 21 3470

Type			ALU	ST900	ST1400	INOX	GG	UNI		$a_{p\,max}$ mm
21A 21 3444	SNEU 14T7 ANER	HU7810	XXX	–	–	–	–	–	10	6
21A 21 3446	SNMU 14T7 ANER	HB7520	–	XXX	–	–	–	–	10	6
21A 21 3452		HB7510	–	–	XXX	–	–	–	10	6
21A 21 3458		HB7630	–	–	–	XXX	–	–	10	6
21A 21 3460		HB8630	–	–	–	XXX	–	–	10	6
21A 21 3464		HB7730	–	–	–	–	XXX	–	10	6
21A 21 3466		HB7520	–	–	–	–	–	XXX	10	6
21A 21 3468	XNEU 14T7 ANEN-W **Wiper edge insert**	HB7520	–	–	–	–	–	XXX	10	6
21A 21 3470		HB7730	–	–	–	–	–	XXX	10	6
f_z		mm	0.23	0.3	0.25	0.2	0.3	–		

45° ≠ MTC POWER CARD Garant

Softcut® 45 high-performance indexable face mill for SE.T1305 and XEEW inserts



High number of cutting edges for very high productivity. Positive rake for soft cut and low power consumption. Individual tool geometry ensures very smooth cutting.

Size 160/12–250/16 – For arbors to DIN 2079, with 4 additional attachment holes and without internal cooling.

Note: Use GARANT torque screwdriver TQ No. **211750 3.0** with bit No. **674252 15IP**.

∅ D / number of effective cutting edges Z	210 21 3555 Softcut®45° high-performance indexable face mill with bore	∅ D_{max}	L_{tot}	Mounting bore ∅	Pack of insert screws
mm		mm	mm	mm	
32/3	XXX	44	40	16	219833 (15IP; 3.0 Nm)
40/3	XXX	52.2	40	16	219833 (15IP; 3.0 Nm)
40/4	XXX	52.2	40	16	219833 (15IP; 3.0 Nm)
50/4	XXX	62.1	40	22	219833 (15IP; 3.0 Nm)
50/5	XXX	62.1	40	22	219833 (15IP; 3.0 Nm)
63/4	XXX	75	40	22	219833 (15IP; 3.0 Nm)
63/6	XXX	75	40	22	219833 (15IP; 3.0 Nm)
80/6	XXX	92.1	50	27	219833 (15IP; 3.0 Nm)
80/8	XXX	92.1	50	27	219833 (15IP; 3.0 Nm)
100/8	XXX	112.2	50	32	219833 (15IP; 3.0 Nm)
100/10	XXX	112.2	50	32	219833 (15IP; 3.0 Nm)
125/10	XXX	137.3	63	40	219833 (15IP; 3.0 Nm)
125/12	XXX	137.3	63	40	219833 (15IP; 3.0 Nm)
160/12	XXX	172.3	63	40	219833 (15IP; 3.0 Nm)
200/14	XXX	212.3	63	60	219833 (15IP; 3.0 Nm)
250/16	XXX	262.3	63	60	219833 (15IP; 3.0 Nm)

Milling inserts SE.T1305 and XEEW1305 for Softcut® 45 high-performance indexable face mill

Increased insert thickness for the highest metal removal rates. Protected against wear by the latest coating.

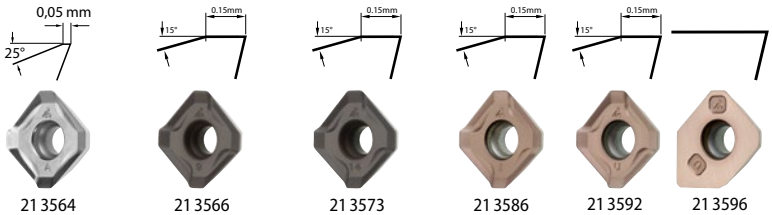
Note: Standard application values for a_e = 0.5... 1×D / a_{pmax} = 4 mm.

21 3596 – For the best surface quality, use at least one wiper edge insert. Length of the flat chamfer 7.2 mm.

21 3566/3573/3586 – For the best surface quality, use together with No. 213596 UNI.

a_e / D	0.5 ... 1.0	0.3	0.1
Correction factor f_z	1.0	1.4	2.2

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	Graphite GRP CRP					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	K	N					
21 3564	700	700	650																	○		●	
21 3566/3568				240	200	180														○		●	
21 3573/3577							130	120												○		●	
21 3586/3588														170	130	30				○		●	
21 3592				220	180	160	90	90						150	120		90			○		●	



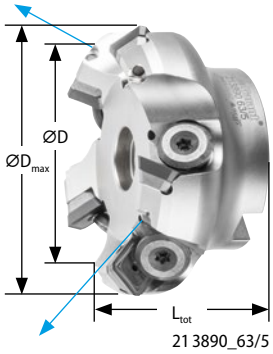
21 3564 21 3566 21 3573 21 3586 21 3592 21 3596

Type			ALU	ST900	ST1400	INOX	UNI	
21A 21 3564	SEET 1305 AGFR	HU7810	XXX	–	–	–	–	10
21A 21 3566	SEET 1305 AGSR	HB7520	–	XXX	–	–	–	10
21A 21 3568	SEMT 1305 AGSR	HB7520	–	XXX	–	–	–	10
21A 21 3573	SEET 1305 AGSR	HB7510	–	–	XXX	–	–	10
21A 21 3577	SEMT 1305 AGSR	HB7510	–	–	XXX	–	–	10
21A 21 3586	SEET 1305 AGSR	HB8630	–	–	–	XXX	–	10
21A 21 3588	SEMT 1305 AGSR	HB8630	–	–	–	XXX	–	10
21A 21 3592		HB7520	–	–	–	–	XXX	10
21A 21 3596	XEEW 1305 AGER **Wiper edge insert**	HB7730	–	–	–	–	XXX	10
f_z		mm	0.2	0.2	0.22	0.22	–	

45° ≠ POWER CARD

Garant Indexable face mills 45° for milling inserts SE..1203..

45° indexable face mill with unequal pitch for smooth cutting.
Precision insert pockets due to special carbide shims.
Size 160/7–250/13 – For arbors to DIN 2079, with 4 additional attachment holes.



21 3890_63/5

∅ D / number of teeth Z	210 21 3890 Indexable face mill 45° with bore	∅ D_{max}	L_{tot}	Mounting bore ∅	suitable indexable insert	Clamp screw for insert	Shim	Clamp screw for shim
mm		mm	mm	mm				
50/4	XXX	63	48	22	SE.. 1203..	219862 (25IP; 6 Nm)	219860	219861 (TX8)
63/5	XXX	76	40	22	SE.. 1203..	219862 (25IP; 6 Nm)	219860	219861 (TX8)
80/6	XXX	93	50	27	SE.. 1203..	219862 (25IP; 6 Nm)	219860	219861 (TX8)
100/6	XXX	113	50	32	SE.. 1203..	219862 (25IP; 6 Nm)	219860	219861 (TX8)
125/7	XXX	138	63	40	SE.. 1203..	219862 (25IP; 6 Nm)	219860	219861 (TX8)
160/7	XXX	178	63	40	SE.. 1203..	219862 (25IP; 6 Nm)	219860	219861 (TX8)
200/10	XXX	213	63	60	SE.. 1203..	219862 (25IP; 6 Nm)	219860	219861 (TX8)
250/13	XXX	263	63	60	SE.. 1203..	219862 (25IP; 6 Nm)	219860	219861 (TX8)

Garant Milling inserts SE.. 1203.. for indexable face mill No. 213890

Note: Standard application values for a_e = 0.5 ... 1×D / $a_{p\,max}$ = 3.5 mm.

a_e / D	0.5 . . . 1.0	0.3	0.1
Correction factor f_z	1	1.4	2.2

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 67 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	CuZn	Graphite GRP CRP	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	M	M	S	K	N	N						
213900				**300**	**250**	220																●	
213905															**130**					●		●	
213906			650	**260**	**200**	**160**	140	120				**170**	**120**	40	140			●		●		●	
213909				**215**	**205**	**200**	95	95				**90**			130			●		●		○	
213911			450	**280**	**270**	**240**	160	120	60	40	30	**230**	170	45	150	400	○	●		○		●	●
213912				235	230	220	**105**	**105**							**130**					○		●	
213921				235	**230**	**220**	105	105				170			130					○		●	
213922/3923				**260**	**180**	**150**	140	130				170	110		120			●	●	●	●	●	●
213925				215	205	200	95	95				**90**	**80**	**65**						●		○	
213933						**250**	**180**	150											○			●	
213950				290	230	170	**105**	**105**												○		●	
213951				290	210	170	**160**	**150**				210	140		130				●	○	○	●	●
213960	**725**	**500**	**350**																	●		○	
213961	**725**	**650**	**480**														●			●		○	

213960 213900 213922 213933 213912 213925 213905 213906

Type			ALU	ST500	ST900	ST1100	ST1400	INOX	GG	UNI	
21A 213960	SEKR 1203 AFFN	HU7710	XXX	–	–	–	–	–	–	–	10
21B 213961	SEKR 1203 AFFN **diamond-coated**	HB7810	XXX	–	–	–	–	–	–	–	1
21A 213900	SEEN 1203 AFTN	CU7725	–	XXX	–	–	–	–	–	–	10
21A 213921	SEKR 1203 AFTN	HB7525	–	–	XXX	–	–	–	–	–	10
21A 213922	SEKN 1203 AFTN	HB7525	–	–	XXX	–	–	–	–	–	10
21A 213923	SEKR 1203 AFTN	HB7525	–	–	XXX	–	–	–	–	–	10
21A 213933		HB8520	–	–	–	XXX	–	–	–	–	10
21A 213912	SEKN 1203 AFTN	HB7520	–	–	–	–	XXX	–	–	–	10
21A 213950	SECN 1203 AFSN	HB7735	–	–	–	–	XXX	–	–	–	10
21A 213951	SEKN 1203 AFTN	HB7515	–	–	–	–	XXX	–	–	–	10
21A 213925	SEKR 1203 AFTN	HB7635	–	–	–	–	–	XXX	–	–	10
21A 213905	SEKN 1203 AFTN	HB7710	–	–	–	–	–	–	XXX	–	10
21A 213906		HB735	–	–	–	–	–	–	–	XXX	10
21A 213909		HB7525	–	–	–	–	–	–	–	XXX	10
21A 213911	SEKR 1203 AFTN	HB720	–	–	–	–	–	–	–	XXX	10
f_z		mm	0.24	0.19	0.19	0.19	0.19	0.19	0.15	–	

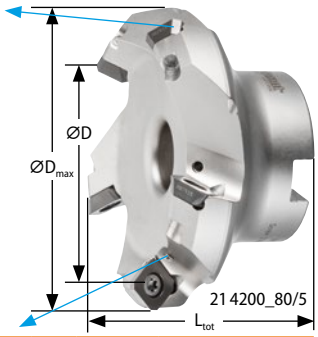
45° ≠ MTC POWER CARD Garant

Garant Indexable face mills 45° MTC for milling inserts SE.. 1204..

Size 160/7–250/16 – For arbors to DIN 2079, with 4 additional attachment holes.

Note: Use GARANT torque screwdriver TQ No. **211750 size 5.7** with bit shank No. **674252 size 20IP**.

Size 160/7–250/16 – For technical reasons **without internal coolant supply.**



Ø D / number of teeth Z	210 21 4200 Indexable face mill 45° right-hand cutting	210 21 4205 Indexable face mill 45° left-hand cutting	Ø D$_{max}$	L$_{tot}$	Mounting bore Ø	Pack of insert screws
mm	with bore	with bore	mm	mm	mm	
32/3	XXX	–	44	40	16	219800 (20IP; 5.7 Nm)
40/3	XXX	–	53	40	16	219800 (20IP; 5.7 Nm)
40/4	XXX	–	53	40	16	219800 (20IP; 5.7 Nm)
50/4	XXX	–	63	40	22	219800 (20IP; 5.7 Nm)
50/5	XXX	XXX	63	40	22	219800 (20IP; 5.7 Nm)
63/4	XXX	–	75	40	22	219800 (20IP; 5.7 Nm)
63/6	XXX	XXX	75	40	22	219800 (20IP; 5.7 Nm)
80/5	XXX	–	93	50	27	219800 (20IP; 5.7 Nm)
80/6	XXX	XXX	93	50	27	219800 (20IP; 5.7 Nm)

Ø D / number of teeth Z	210 21 4200 Indexable face mill 45° right-hand cutting	210 21 4205 Indexable face mill 45° left-hand cutting	Ø D$_{max}$	L$_{tot}$	Mounting bore Ø	Pack of insert screws
mm	with bore	with bore	mm	mm	mm	
80/8	XXX	–	93	50	27	219800 (20IP; 5.7 Nm)
100/6	XXX	–	113	50	32	219800 (20IP; 5.7 Nm)
100/8	XXX	XXX	113	50	32	219800 (20IP; 5.7 Nm)
125/7	XXX	–	138	63	40	219800 (20IP; 5.7 Nm)
125/10	XXX	–	138	63	40	219800 (20IP; 5.7 Nm)
160/7	XXX	–	173	63	40	219800 (20IP; 5.7 Nm)
160/12	XXX	–	173	63	40	219800 (20IP; 5.7 Nm)
200/14	XXX	–	216	63	40	219800 (20IP; 5.7 Nm)
250/16	XXX	–	263	63	60	219800 (20IP; 5.7 Nm)

Garant Milling inserts SE.. 1204.. for indexable face mills No. 214200 and 214205

Note:

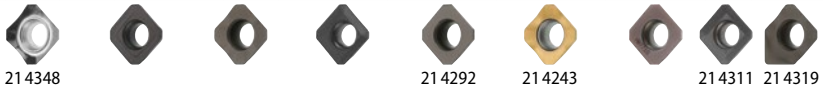
21 4319 – For the best surface quality use at least **one wiper edge insert**. Length of the flat chamfer 8 mm.

21 4352 – Standard application values for a_e = 0.5 ... 1×D / $a_{p\,max}$ = 1.5 mm.

21 4240–4351 – Standard application values for a_e = 0.5 ... 1×D / $a_{p\,max}$ = 3.5 mm.

a_e / D	0.5 . . . 1.0	0.3	0.1
Correction factor f_z	1	1.4	2.2

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 67 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	CuZn	Graphite GRP CRP	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	M	M	S	K	N	N						
21 4240				**450**	**350**	300						230	190						●	●	●	●	●
21 4242				**290**	**200**	**170**	160	150				190	120		130			●	●	●	●	●	●	●
21 4243/4245				215	205	200						**90**	**80**	**65**						●		○		
21 4244						**250**	**180**	**150**											○			●		
21 4270				235	230	220	**105**	**105**				170			130					○		●		
21 4290							**105**	**105**							**130**					○		●		
21 4292				320	230	190	**180**	**170**				230	150		150				●	○	○	●	●	●
21 4310				**260**	**220**	**200**						**170**	150					●		○		●		
21 4311			450	**280**	**270**	**240**	160	120	60	40	30	**230**	170	45	150	400	○	●		●		●		
21 4315			650	**260**	**200**	**160**	**140**	**120**				**170**	**120**	40	140			●		●		●		
21 4340															**200**					●		●		
21 4348	**725**	**500**	**350**																	●		○		
21 4351	**725**	**650**	**480**														●			●		○		
21 4352	**1500**	**1200**	**1200**													**1000**				●		●		



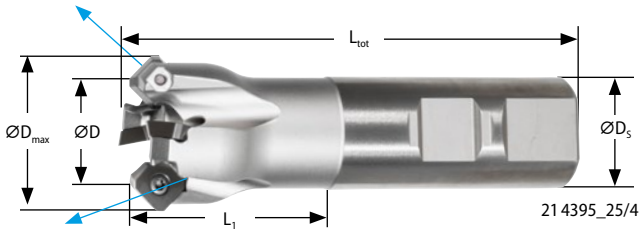
Type			ALU	ST500	ST900	ST1100	ST1400	INOX	GG	UNI	
21A 21 4348	SEHT 1204 AFFN	HU7815	XXX	–	–	–	–	–	–	–	10
21B 21 4351	SEHT 1204 AFFN **diamond-coated**	HB7810	XXX	–	–	–	–	–	–	–	10
21L 21 4352	SEHW 1204 AFFN	PCD	XXX	–	–	–	–	–	–	–	1
21A 21 4240	SEHT 1204 AFTN	CU7725	–	XXX	–	–	–	–	–	–	10
21A 21 4242	SEKT 1204 AFTN	HB7525	–	–	XXX	–	–	–	–	–	10
21A 21 4244		HB8520	–	–	–	XXX	–	–	–	–	10
21A 21 4270	SEKA 1204 AFTN	HB7720	–	–	–	–	XXX	–	–	–	10
21A 21 4290	SEKW 1204 AFTN	HB7520	–	–	–	–	XXX	–	–	–	10
21A 21 4292		HB7515	–	–	–	–	XXX	–	–	–	10
21A 21 4243	SEET 1204 AFTN	HB7635	–	–	–	–	–	XXX	–	–	10
21A 21 4245	SEKT 1204 AFTN	HB7635	–	–	–	–	–	XXX	–	–	10
21A 21 4340	SEKA 1204 AFTN	HB7710	–	–	–	–	–	–	XXX	–	10
21A 21 4310	SEHT 1204 AFSN	HB7535	–	–	–	–	–	–	–	XXX	10
21A 21 4311	SEKT 1204 AFTN	HB720	–	–	–	–	–	–	–	XXX	10
21A 21 4315		HB735	–	–	–	–	–	–	–	XXX	10
21A 21 4319	SEET 1204 ZZTN **Wiper edge insert**	HB7515	–	–	–	–	–	–	–	XXX	10
f_z		mm	0.24	0.19	0.19	0.19	0.19	0.19	0.15	–	

45° POWER CARD Garant

Indexable face mills 45° for milling inserts SD.. 0903..

High number of cutting edges for very high productivity.
Positive rake for soft cut and low power consumption.

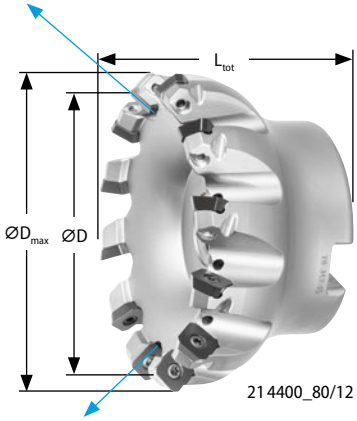
Note: Use GARANT torque screwdriver TQ No. **211750 size 1.5** with bit No. **674252 size 8IP**.



21 4395_25/4

∅ D / number of teeth Z	210 21 4395 Indexable face mill 45° Weldon shank	$∅ D_{max}$	L_1	L_{tot}	$∅ D_s$ h6	Pack of insert screws
mm		mm	mm	mm	mm	
16/2	XXX	24.2	40	90	20	219809 (8IP; 1.5 Nm)
20/3	XXX	28.2	40	90	20	219809 (8IP; 1.5 Nm)
25/4	XXX	33.2	44	100	25	219809 (8IP; 1.5 Nm)

∅ D / number of teeth Z	210 21 4400 Indexable face mill 45° with bore	$∅ D_{max}$	L_{tot}	Mounting bore ∅	Pack of insert screws
mm		mm	mm	mm	
32/4	XXX	40.2	40	16	219809 (8IP; 1.5 Nm)
40/6	XXX	48.2	40	16	219809 (8IP; 1.5 Nm)
50/6	XXX	58.2	40	22	219809 (8IP; 1.5 Nm)
50/8	XXX	58.2	40	22	219809 (8IP; 1.5 Nm)
63/5	XXX	71.2	40	22	219809 (8IP; 1.5 Nm)
63/8	XXX	71.2	40	22	219809 (8IP; 1.5 Nm)
63/10	XXX	71.2	40	22	219809 (8IP; 1.5 Nm)
80/10	XXX	88.2	50	27	219809 (8IP; 1.5 Nm)
80/12	XXX	88.2	50	27	219809 (8IP; 1.5 Nm)
100/12	XXX	108.2	50	32	219809 (8IP; 1.5 Nm)
100/14	XXX	108.2	50	32	219809 (8IP; 1.5 Nm)
125/14	XXX	133.2	63	40	219809 (8IP; 1.5 Nm)



21 4400_80/12

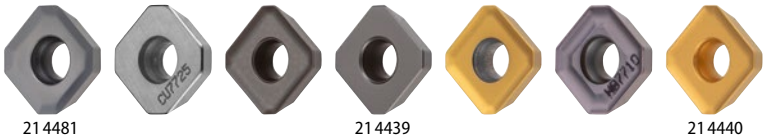
Milling inserts SD.. 0903.. for 45° indexable face mills No. 214395 / 214400

- Indexable inserts for higher cutting speeds and feed rates.
- Precision sintered and ground for best surface finish quality.

Note: Standard application values for a_e = 0.5 ... 1×D / $a_{p\,max}$ = 3 mm.

a_e / D	0.5 ... 1.0	0.3	0.1
Correction factor f_z	1.0	1.4	2.2

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	Graphite GRP CRP	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	M	M	S	K	N						
21 4438							**180**	**130**								**235**				○		●	
21 4439				410	290	240	**220**	**190**					300	190		190			●	○	○	●	●
21 4440				**350**	**255**	**230**	180	130					**165**	130		235		●		○		●	
21 4441			650	**260**	**200**	**160**	**140**	**120**					**170**	120	40	140				●		●	
21 4460				270	220	220	150	105					**100**	**80**	**50**					●		●	
21 4470																**235**						●	
21 4475				**350**	**255**	230																●	
21 4477				**360**	**255**	**215**	190	170					230	150		160		●	●	●	●	●	●
21 4478	**1500**	**1000**	**500**																	●		●	
21 4481	**1500**	**1300**	**680**														●			●		○	



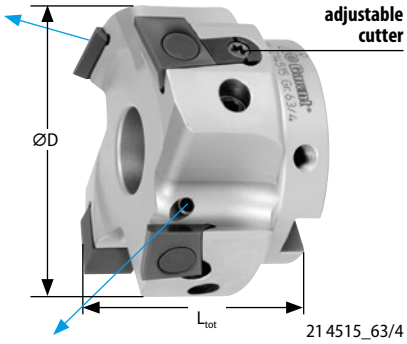
21 4481 — 21 4439 — 21 4440

Type			ALU	ST500	ST900	ST1400	INOX	GG	UNI	
21A **21 4478**	SDHT 0903 AFFN	**HU7815**	XXX	–	–	–	–	–	–	**10**
21B **21 4481**	SDHT 0903 AEFN **diamond-coated**	**HB7810**	XXX	–	–	–	–	–	–	**1**
21A **21 4475**	SDHW 0903 AESN	**CU7725**	–	XXX	–	–	–	–	–	**10**
21A **21 4477**	SDMX 0903 AFEN	**HB7525**	–	–	XXX	–	–	–	–	**10**
21A **21 4438**	SDHX 0903 AFTN	**HB7520**	–	–	–	XXX	–	–	–	**10**
21A **21 4439**		**HB7515**	–	–	–	XXX	–	–	–	**10**
21A **21 4460**	SDMX 0903 AFEN	**HB7635**	–	–	–	–	XXX	–	–	**10**
21A **21 4470**	SDHT 0903 AEEN	**HB7710**	–	–	–	–	–	XXX	–	**10**
21A **21 4440**	SDMX 0903 AFEN	**HB7520**	–	–	–	–	–	–	XXX	**10**
21A **21 4441**		**HB735**	–	–	–	–	–	–	XXX	**10**
f_z		mm	0.19	0.19	0.14	0.14	0.14	0.17	–	

90° HPC POWER CARD Garant

Aluking 90° tangential high-performance indexable face/end mill adjustable HPC

Tangential indexable face/end mill for milling **exact 90° corners.** Cutters partially adjustable in the vertical sense for very high accuracies. Precise insert seating thanks to clamping stud locking.



21 4515_63/4

Ø D / number of teeth Z	21P 21 4515 Aluking indexable face/end mill 90° HPC with bore	Inserts adjustable	L_{tot}	Mounting bore Ø	suitable indexable insert	Adjustment screw	Clamping studs	Pin tightening screw
mm			mm	mm				
40/2	XXX	–	40	16	BG.. 15L5..	–	219893	219894 (3AF; 5.0 Nm)
50/3	XXX	–	40	22	BG.. 15L5..	–	219893	219894 (3AF; 5.0 Nm)
63/4	XXX	1	40	22	BG.. 15L5..	219892	219893	219894 (3AF; 5.0 Nm)
80/5	XXX	1	50	27	BG.. 15L5..	219892	219893	219894 (3AF; 5.0 Nm)
100/6	XXX	2	50	32	BG.. 15L5..	219892	219893	219894 (3AF; 5.0 Nm)
125/8	XXX	2	63	40	BG.. 15L5..	219892	219893	219894 (3AF; 5.0 Nm)

BGHX.. indexable inserts for Aluking tangential high performance indexable face/end mill No. 214515

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	INOX < 900 N	INOX > 900 N	GG(G)	GRP	CRP	Graphite					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	M	M	K	N	N	N					
21 4525	750	750	300																	●		●	
21 4531	900	600	350																	●		●	
21 4540	3500	3500	1000													1000	1000	500		●		●	
21 4543				240	220	220	200	200														●	
21 4545													120	100								●	
21 4547															220							●	

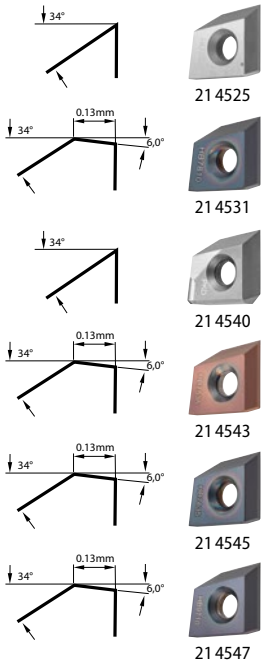
Milling inserts

21 4540 – With additional wide smooth flat chamfer.
21 4525/4531 – Precision ground carbide indexable inserts, ideal for machining thin-walled aluminium material.
21 4543/4545 – Precision-ground carbide indexable insert for high surface qualities when face milling.

Application:

21 4540 – For high cutting speeds and high surface quality. Preferably for use in adjustable insert seatings. Different types of inserts can be mixed.
21 4543/4547 – For surfaces with roughness less than R_z 3 µm. Only for dry machining.

Note:
21 4525/4531 – Standard application values for $a_e = 1 \times D$ / $a_p = 5$ mm, $a_{p\,max} = 10$ mm.
21 4540–4547 – Standard application values for $a_e = 1 \times D$ / $a_p = 3$ mm, $a_{p\,max} = 5$ mm.

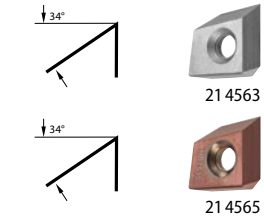


21 4525
21 4531
21 4540
21 4543
21 4545
21 4547

Type			ALU	ST1400	INOX	GG	
21B 21 4525	BGHX 15L5 PCFR	HU7810	XXX	–	–	–	10
21B 21 4531	BGHX 15L5 PCTR	HB7810	XXX	–	–	–	10
21L 21 4540	BGHX 15L5 PCER	PCD	XXX	–	–	–	1
21B 21 4543		HB7535	–	XXX	–	–	10
21B 21 4545	BGHX 15L5 PCTR	HB7635	–	–	XXX	–	10
21B 21 4547		HB9710	–	–	–	XXX	10
f_z		mm	0.25	0.2	0.14	0.2	

Wiper edge inserts

Carbide indexable inserts with wide wiper edge for fitting on adjustable insert seatings. Length of the flat chamfer: 5 mm.



21 4563
21 4565

Type			ALU	ST1400
21B 21 4563	Wiper edge insert	HU7810	XXX	–
21B 21 4565		HB7535	–	XXX

90° POWER CARD Garant

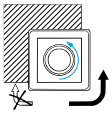
Softcut® HSI for milling inserts SO.T 1205.. and XOEW

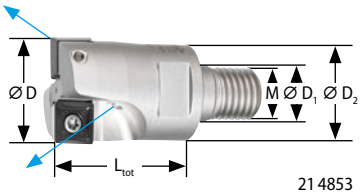
Individual tool geometry ensures very smooth cutting. Exceptionally sturdy insert design for best feed rates. Indexable inserts are secured by special screws with high shear resistance.

21 4855 Size 160/10; 21 4857 Size 160/14 – For arbors to DIN 2079, with 4 additional attachment holes and without internal cooling.

Application: For outstanding surface quality. Burr-free milling.

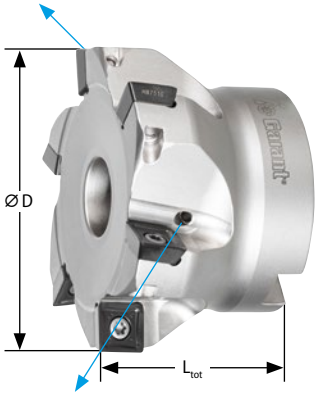
Note: Use GARANT torque screwdriver TQ No. **211750 size 3.0** with bit No. **674252 size 15IP**.
For exact 90° corners, select a_p = 8 mm.
To use all **4 cutting edges**, the insert must **always be turned in the direction shown (anticlockwise).**
21 4857 – For a_e > 0.5×D, reduce $a_{p\,max}$ to 6 mm.





21 4853

∅ D / number of teeth Z	210	21 4853	$a_{p\,max}$	∅ D_1 h6	L_{tot}	∅ D_2	Mounting thread M	suitable indexable insert	Pack of insert screws
		Softcut® HSI							
mm		**with threaded shank**	mm	mm	mm	mm			
32/2		XXX	10	17	42	28.7	M16	SO.. 1205..	219833 (15IP; 3.0 Nm)



21 4855

∅ D / number of teeth Z	210	21 4855	$a_{p\,max}$	L_{tot}	Mounting bore ∅	suitable indexable insert	Pack of insert screws
		Softcut® HSI wide pitch					
mm		**with bore**	mm	mm	mm		
50/4		XXX	10	40	22	SO.. 1205..	219833 (15IP; 3.0 Nm)
63/4		XXX	10	40	22	SO.. 1205..	219833 (15IP; 3.0 Nm)
80/6		XXX	10	50	27	SO.. 1205..	219833 (15IP; 3.0 Nm)
100/8		XXX	10	50	32	SO.. 1205..	219833 (15IP; 3.0 Nm)
125/8		XXX	10	63	40	SO.. 1205..	219833 (15IP; 3.0 Nm)
160/10		XXX	10	63	40	SO.. 1205..	219833 (15IP; 3.0 Nm)

∅ D / number of teeth Z	210	21 4857	$a_{p\,max}$	L_{tot}	Mounting bore ∅	suitable indexable insert	Pack of insert screws
		Softcut® HSI close pitch					
mm		**with bore**	mm	mm	mm		
40/3		XXX	10	40	16	SO.. 1205..	219833 (15IP; 3.0 Nm)
50/5		XXX	10	40	22	SO.. 1205..	219833 (15IP; 3.0 Nm)
63/6		XXX	10	40	22	SO.. 1205..	219833 (15IP; 3.0 Nm)
80/8		XXX	10	50	27	SO.. 1205..	219833 (15IP; 3.0 Nm)
100/10		XXX	10	50	32	SO.. 1205..	219833 (15IP; 3.0 Nm)
125/12		XXX	10	63	40	SO.. 1205..	219833 (15IP; 3.0 Nm)
160/14		XXX	10	63	40	SO.. 1205..	219833 (15IP; 3.0 Nm)

Milling inserts SO.T 1205.. and XOEW for Softcut® HSI No. 214853 / 214855 / 214857

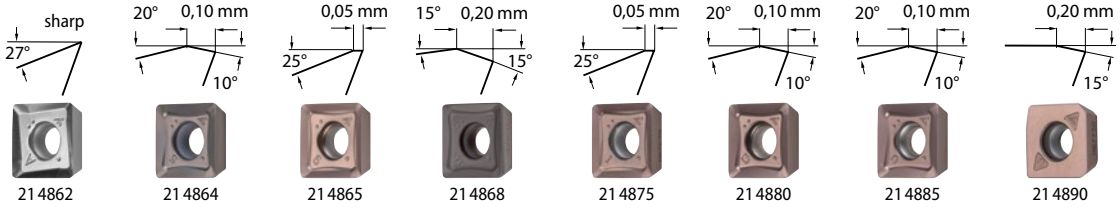
Increased insert thickness for the highest metal removal rates. Protected against wear by the latest coating.

21 4864 – Cermet.

Note: Standard application values for $a_e = 0.3 \times D$.

21 4890 – Length of the wiper flat 6.5 mm.

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	Uni				
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	K					
21 4860/4862	700	700	650																○		●	
21 4864				270	260	210								100					○		●	
21 4865/4866				320	300	260													○		●	
21 4867/4868							240	180											○		●	
21 4870							160	130											○		●	
21 4874–21 4878														120	100				○		●	
21 4880																	200		○		●	
21 4884/4885				260	240	190	120	110						90	70			●	○		●	



21 4862 | 21 4864 | 21 4865 | 21 4868 | 21 4875 | 21 4880 | 21 4885 | 21 4890

Type			ALU	ST500	ST900	ST1400	INOX	GGG	UNI	
21A 21 4860	SOET 120504 PDER	HU7810	XXX	–	–	–	–	–	–	10
21A 21 4862	SOET 120508 PDER	HU7810	XXX	–	–	–	–	–	–	10
21A 21 4864	SOMT 120508 PDER	CU7530	–	XXX	–	–	–	–	–	10
21A 21 4866	SOMT 120504 PDER	HB7520	–	–	XXX	–	–	–	–	10
21A 21 4865	SOMT 120508 PDER	HB7520	–	–	XXX	–	–	–	–	10
21A 21 4867	SOMT 120504 PDER	HB7510	–	–	–	XXX	–	–	–	10
21A 21 4868	SOMT 120508 PDER	HB7510	–	–	–	XXX	–	–	–	10
21A 21 4870		HB7520	–	–	–	XXX	–	–	–	10
21A 21 4874	SOMT 120504 PDER	HB7630	–	–	–	–	XXX	–	–	10
21A 21 4875	SOMT 120508 PDER	HB7630	–	–	–	–	XXX	–	–	10
21A 21 4877	SOMT 120504 PDER	HB8630	–	–	–	–	XXX	–	–	10
21A 21 4878	SOMT 120508 PDER	HB8630	–	–	–	–	XXX	–	–	10
21A 21 4880		HB7730	–	–	–	–	–	XXX	–	10
21A 21 4884	SOMT 120504 PDER	HB7520	–	–	–	–	–	–	XXX	10
21A 21 4885	SOMT 120508 PDER	HB7520	–	–	–	–	–	–	XXX	10
21A 21 4890	XOEW 120508 PDER-W **Wiper edge insert**	HB7730	–	–	–	–	–	–	XXX	10
f_z		mm	0.2	0.2	0.2	0.22	0.17	0.2	–	

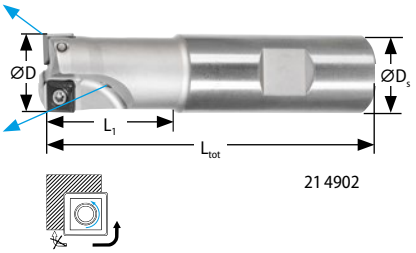
90° | POWER CARD

Softcut® HSI for milling inserts SO.T 0836.. and XOEW

Wear-resistant heat-treated steel with corrosion-inhibiting coating. Precise indexable insert seating by use of appropriate torque. Wide and close tooth pitches for individual milling strategies.

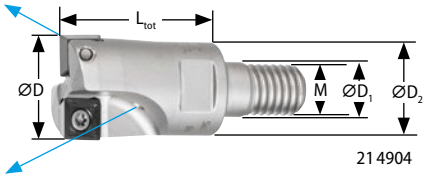
Application: Particularly suitable for machines with lower drive power and for machining at greater depths and small entry diameters.

Note: **For exact 90° corners, select a_p = 6 mm.**
To use all **4 cutting edges**, the insert must **always be turned in the direction shown (anticlockwise).**
Use GARANT torque screwdriver TQ No. **211750 size 2.2** with bit No. **674252 size 8IP**.



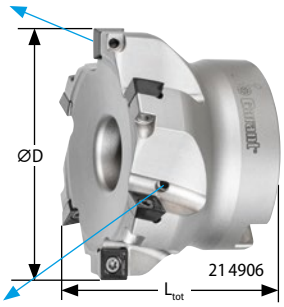
21 4902

Ø D / number of teeth Z	210 21 4902 Softcut® HSI Weldon shank	$a_{p\,max}$	L_1	L_{tot}	Ø D_s h6	suitable indexable insert	Pack of insert screws
mm		mm	mm	mm	mm		
20/2	XXX	6	35	85	20	SO.. 0836..	219863 (8IP; 2.2 Nm)
25/3	XXX	6	39	95	25	SO.. 0836..	219863 (8IP; 2.2 Nm)
32/4	XXX	6	45	105	32	SO.. 0836..	219863 (8IP; 2.2 Nm)



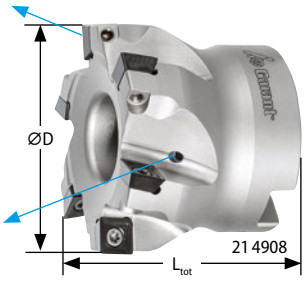
21 4904

∅ D / number of teeth Z	210 21 4904 Softcut® HSI	$a_{p\,max}$	$Ø\,D_1$ h6	L_{tot}	$Ø\,D_2$	Mounting thread M	suitable indexable insert	Pack of insert screws
mm	**with thread**	mm	mm	mm	mm			
20/2	XXX	6	10.5	30	17.7	M10	SO.. 0836..	219863 (8IP; 2.2 Nm)
25/3	XXX	6	12.5	35	20.7	M12	SO.. 0836..	219863 (8IP; 2.2 Nm)
32/4	XXX	6	17	40	28.7	M16	SO.. 0836..	219863 (8IP; 2.2 Nm)
40/5	XXX	6	17	40	28.7	M16	SO.. 0836..	219863 (8IP; 2.2 Nm)



21 4906

∅ D / number of teeth Z	210 21 4906 Softcut® HSI, wide pitch	$a_{p\,max}$	L_{tot}	Mounting bore ∅	suitable indexable insert	Pack of insert screws
mm	**with bore**	mm	mm	mm		
40/4	XXX	6	40	16	SO.. 0836..	219863 (8IP; 2.2 Nm)
50/5	XXX	6	40	22	SO.. 0836..	219863 (8IP; 2.2 Nm)
63/6	XXX	6	40	22	SO.. 0836..	219863 (8IP; 2.2 Nm)
80/7	XXX	6	50	27	SO.. 0836..	219863 (8IP; 2.2 Nm)
100/8	XXX	6	50	32	SO.. 0836..	219863 (8IP; 2.2 Nm)



21 4908

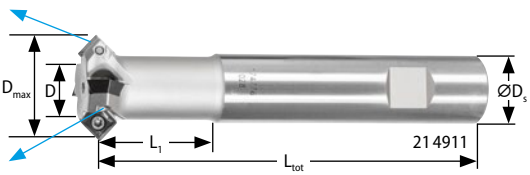
∅ D / number of teeth Z	210 21 4908 Softcut® HSI, close pitch	$a_{p\,max}$	L_{tot}	Mounting bore ∅	suitable indexable insert	Pack of insert screws
mm	**with bore**	mm	mm	mm		
40/5	XXX	6	40	16	SO.. 0836..	219863 (8IP; 2.2 Nm)
50/6	XXX	6	40	22	SO.. 0836..	219863 (8IP; 2.2 Nm)
63/7	XXX	6	40	22	SO.. 0836..	219863 (8IP; 2.2 Nm)
80/8	XXX	6	50	27	SO.. 0836..	219863 (8IP; 2.2 Nm)
100/10	XXX	6	50	32	SO.. 0836..	219863 (8IP; 2.2 Nm)

45° 45° ≠ POWER CARD Garant

Softcut ® HSI chamfer mill 45° for SO.T0836..

Very high performance milling tool for forwards and reverse machining.

Note: D_{max} for use with indexable inserts r = 0.4 mm.
Use GARANT torque screwdriver TQ No. **211750 size 2.2** with bit No. **674252 size 8IP**.



21 4911

∅ D / number of effective cutting edges Z	210 21 4911 Softcut® HSI indexable chamfer mill	Number of cutting edges Z	∅ D	$Ø\,D_{max}$	L_1	L_{tot}	$Ø\,D_s$ h6	suitable indexable insert	Pack of insert screws
mm	**Weldon shank**		mm	mm	mm	mm	mm		
16/3	XXX	3	16	26.3	35	110	16	SO.T 0836..	219863 (8IP; 2.2 Nm)
20/4	XXX	4	20	30.3	40	120	20	SO.T 0836..	219863 (8IP; 2.2 Nm)
25/5	XXX	5	25	35.1	45	130	25	SO.T 0836..	219863 (8IP; 2.2 Nm)

Garant Milling inserts SO.T 0836.. and XOEW for Softcut® HSI No. 214902 / 4904 / 4906 / 4908 / 4911

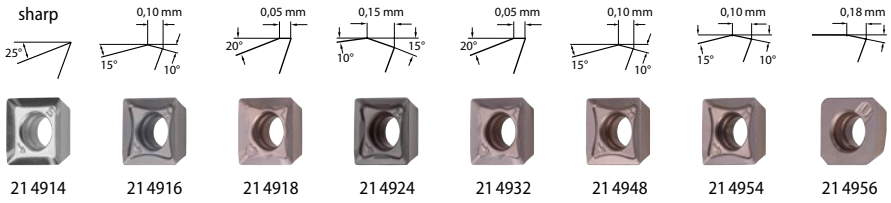
Increased insert thickness permits markedly deep trough geometry for positive cutting action, and minimises the susceptibility to fracture.

Tool material:

21 4916 – Cermet.

Note: Standard application values for $a_e = 0.3 \times D$.
21 4956 – Length of the flat chamfer 3.4 mm.

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	Uni				
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	K					
21 4914	700	700	650																○	○	●	
21 4916				270	220	180													○		●	
21 4918				320	250	210													○		●	
21 4924/4925							220	180											○		●	
21 4928/4929							180	140											○		●	
21 4932–21 4937														150	120				○		●	
21 4948																	200		○		●	
21 4954/4955				260	240	190	120	110						90	70			●	○		●	



21 4914 21 4916 21 4918 21 4924 21 4932 21 4948 21 4954 21 4956

Type			ALU	ST500	ST900	ST1400	INOX	GGG	UNI	
21A 21 4914	SOET 083604 PDER	HU7810	XXX	–	–	–	–	–	–	10
21A 21 4916	SOMT 083604 PDER	CU7530	–	XXX	–	–	–	–	–	10
21A 21 4918		HB7520	–	–	XXX	–	–	–	–	10
21A 21 4924		HB7510	–	–	–	XXX	–	–	–	10
21A 21 4925	SOMT 083608 PDER	HB7510	–	–	–	XXX	–	–	–	10
21A 21 4928	SOMT 083604 PDER	HB7520	–	–	–	XXX	–	–	–	10
21A 21 4929	SOMT 083608 PDER	HB7520	–	–	–	XXX	–	–	–	10
21A 21 4932	SOMT 083604 PDER	HB7630	–	–	–	–	XXX	–	–	10
21A 21 4933	SOMT 083608 PDER	HB7630	–	–	–	–	XXX	–	–	10
21A 21 4935	SOMT 083604 PDER	HB8630	–	–	–	–	XXX	–	–	10
21A 21 4937	SOMT 083608 PDER	HB8630	–	–	–	–	XXX	–	–	10
21A 21 4948	SOMT 083604 PDER	HB7730	–	–	–	–	–	XXX	–	10
21A 21 4954		HB7520	–	–	–	–	–	–	XXX	10
21A 21 4955	SOMT 083608 PDER	HB7520	–	–	–	–	–	–	XXX	10
21A 21 4956	XOEW 0836 PDER-W **Wiper edge insert**	HB7730	–	–	–	–	–	–	XXX	10
f_z		mm	0.15	0.12	0.15	0.17	0.15	0.15	–	

Suitable PPE can be found in volume 4 of the catalogue*

Feel safe. Work better.
Personal protective equipment from head to toe.

09 6857_clear
Comfort safety glasses

Flexible assembly gloves
09 4300

* available only in the EU.

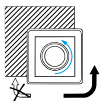
Indexable end / face mill 90° for indexable inserts SOMT 09T304

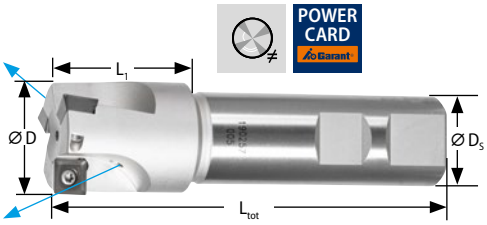
Made of hardened special steel for low vibration and long life. Very good surface finishes are obtained due to projecting flat cutting edge.

Attention:

21 5055 – Without a PowerCard!

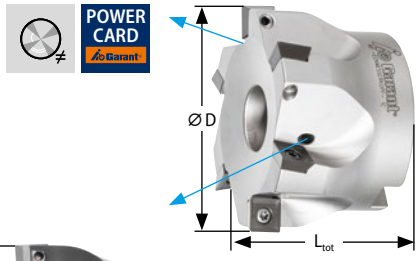
Note:	To use all **4 cutting edges**, the insert **always has to be turned in the indicated direction.** Use GARANT torque screwdriver TQ No. **211750 size 2.2** with bit No. **674252 size 9IP**.





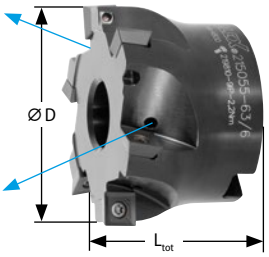
21 5045

Ø D / number of teeth Z	210 21 5045	L_1	L_{tot}	Ø D_s h6	suitable indexable insert	Pack of insert screws
	Garant Indexable end mill 90°					
mm	**Weldon shank**	mm	mm	mm		
25/2	XXX	31	105	25	SOMT 09T304	219810 (9IP; 2.2 Nm)
32/3	XXX	41	110	25	SOMT 09T304	219810 (9IP; 2.2 Nm)



21 5050

Ø D / number of teeth Z	210 21 5050	220 21 5055	L_{tot}	Mounting bore Ø	suitable indexable insert	Pack of insert screws
	Garant	HOLEX				
	Indexable face mill 90°					
mm	**with bore**	**with bore**	mm	mm		
40/4	XXX	XXX	40	16	SOMT 09T304	219810 (9IP; 2.2 Nm)
50/5	XXX	XXX	40	22	SOMT 09T304	219810 (9IP; 2.2 Nm)
63/6	XXX	XXX	40	22	SOMT 09T304	219810 (9IP; 2.2 Nm)
80/6	XXX	XXX	50	27	SOMT 09T304	219810 (9IP; 2.2 Nm)
100/8	XXX	XXX	50	32	SOMT 09T304	219810 (9IP; 2.2 Nm)



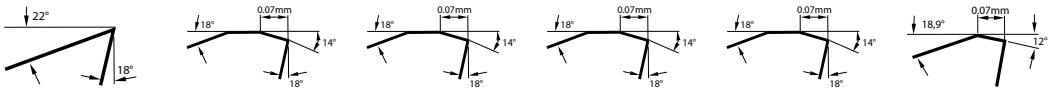
21 5055

Milling inserts SOMT 09T304 for indexable end / face mills No. 215045 / 215050 / 215055

Extremely **strong inserts** to the standard ISO dimensions, precision sintered and ground. High strength and wear resistance due to micro-grain structure.

Note:	Standard application values for $a_e = 0.3 \times D$ / $a_{p\,max} = 5$ mm.

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	CuZn	Graphite GRP CRP	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	M	M	S	K	N	N						
21 5065	**780**	**700**	**610**													**480**			●		○	○	
21 5066	**780**	**780**	**780**														●		●			○	
21 5068				**250**	**180**	**170**	110					120	100						○			●	
21 5069				**360**	**250**	**210**	200	180				**230**	140		160				●	●	●	●	●
21 5072				250	180	170	**160**	**130**				120	90		**200**					○		●	
21 5073				400	280	235	**220**	**205**				290	180		180				●	○	○	●	●
21 5075				270	190	160	150	140				**190**	**120**		120				○	○	○	●	
21 5078				**320**	**215**	**180**	170	160				**210**	140	40	140			●	●	●	●	●	○
21 5095				**250**	**250**	**180**	140	120				**180**	160		170			●		○		●	



21 5065 21 5069 21 5073 21 5075 21 5078 21 5095

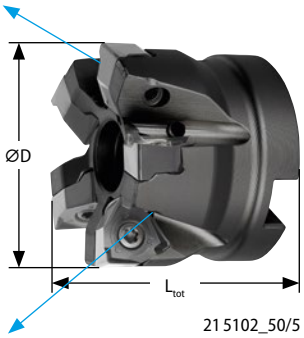
Type				ALU	ST900	ST1400	INOX	UNI	
21A **21 5065**	Garant	SOMT 09T304 FR	HU7710	XXX	–	–	–	–	10
21B **21 5066**	Garant	SOMT 09T304 FR **diamond-coated**	HB7810	XXX	–	–	–	–	1
21A **21 5068**	Garant	SOMT 09T304 TR	HB7525	–	XXX	–	–	–	10
21A **21 5069**	Garant		HB7525	–	XXX	–	–	–	10
21A **21 5072**	Garant		HB7520	–	–	XXX	–	–	10
21A **21 5073**	Garant		HB7515	–	–	XXX	–	–	10
21A **21 5075**	Garant		HB7635	–	–	–	XXX	–	10
21A **21 5078**	Garant		HB735	–	–	–	–	XXX	10
22A **21 5095**	HOLEX	SOMT 09T304	HBX20	–	–	–	–	XXX	10
f_z			mm	0.13	0.14	0.12	0.11	–	

HOLEX 90° shoulder milling cutter for XNEX0806..

Robust shoulder milling cutter. Insert seats enclose the inserts on several sides for stable machining conditions. For use in combination with indexable insert 215117 UNI as a **high feed rate indexable face mill**.

Application: With double-sided 3-edge inserts XNEX0806.. or single-sided 3-edge inserts XNEX0806..
High feed rate.

Note: GARANT torque screwdriver TQ No. **211750 size 3.8** with bit No. **674252 size 15IP**.



21 5102_50/5

∅ D / number of teeth Z	220 21 5102 Shoulder milling cutter 90° with bore	$a_{p\,max}$	L_{tot}	Mounting bore ∅	suitable indexable insert	Pack of insert screws
mm		mm	mm	mm		
50/5	XXX	4	40	22	XNEX 0806..	219798 1 (15IP; 3.8 Nm)
63/6	XXX	4	40	22	XNEX 0806..	219798 1 (15IP; 3.8 Nm)
80/7	XXX	4	50	27	XNEX 0806..	219798 1 (15IP; 3.8 Nm)
100/8	XXX	4	50	32	XNEX 0806..	219798 1 (15IP; 3.8 Nm)

HOLEX XNEX 0806.. milling inserts for shoulder milling cutter No. 215102

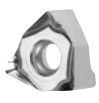
6 edges ensure good value for money, due to a low price per cutting edge.

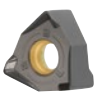
21 5117 – Single-sided 3-edge carbide indexable insert with special **geometry for high feed rates.** Programming radius at $a_{p\,max}$ of 2.4 mm.

21 5104–5112 – Double-sided 2×3-edge carbide indexable insert for **shoulder milling operations**

Note: Standard application values for $a_e = 0.3 \times D$ / $a_p = 3$mm.
21 5117 – $a_e = 0.6 \times D$ / $a_p = 0.8$ mm.

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	Graphite GRP CRP	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	N						
21 5104	**1100**	**1100**	**900**																○	○	●	●	
21 5106				**330**	**300**	**250**	**220**	**200**											○	○	●	●	
21 5108														**160**	**120**				○	○	●	●	
21 5112/5117				**280**	**240**	**220**	**200**	**180**						**120**	**95**			●	○	○	●	●	


21 5104


21 5106

21 5108

21 5112

21 5117

Type			ALU	ST1400	INOX	UNI		$a_{p\,max}$ mm
22A 21 5104	XNEX 080608	HUM310	XXX	–	–	–	10	4
22A 21 5106		HBM015	–	XXX	–	–	10	4
22A 21 5108		HBM130	–	–	XXX	–	10	4
22A 21 5112		HBM20	–	–	–	XXX	10	4
22A 21 5117	XNEX 080610 **High feed rate**	HBM20	–	–	–	XXX	10	1
f_z		mm	0.15	0.21	0.12	–		

90° POWER CARD Garant

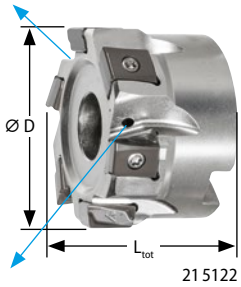
GARANT Power Tang 90° high performance tangential shoulder milling cutter for LO.U1307..

Maximum stability due to tangentially arranged inserts.
High feed rate values for maximum metal removal rate due to optimum indexable insert with stability in the direction of the cutting force.

Note: Use GARANT torque screwdriver TQ No. **211750 size 3.0** with bit No. **674252 size 15IP**.

Single-row

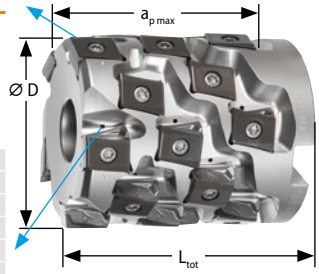
Ø D / number of effective cutting edges Z	210 21 5122 Power Tang 90° high performance tangential shoulder milling cutter with bore	$a_{p\,max}$	L_{tot}	Mounting bore Ø	Pack of insert screws
mm		mm	mm	mm	
40/4	XXX	12	40	16	219882 (15IP; 3.0 Nm)
40/5	XXX	12	40	16	219882 (15IP; 3.0 Nm)
50/5	XXX	12	40	22	219882 (15IP; 3.0 Nm)
50/6	XXX	12	40	22	219882 (15IP; 3.0 Nm)
63/6	XXX	12	40	27	219882 (15IP; 3.0 Nm)
63/8	XXX	12	40	27	219882 (15IP; 3.0 Nm)
80/7	XXX	12	50	27	219882 (15IP; 3.0 Nm)
80/10	XXX	12	50	27	219882 (15IP; 3.0 Nm)
100/9	XXX	12	50	32	219882 (15IP; 3.0 Nm)
100/12	XXX	12	50	32	219882 (15IP; 3.0 Nm)
125/12	XXX	12	63	40	219882 (15IP; 3.0 Nm)
125/15	XXX	12	63	40	219882 (15IP; 3.0 Nm)



21 5122

Multi-row

Ø D / Z_{eff}	210 21 5126 Power Tang 90° high performance tangential shoulder milling cutter with bore	number of effective inserts Z_{eff}	Number of inserts	$a_{p\,max}$	L_{tot}	Mounting bore Ø	Pack of insert screws
mm				mm	mm	mm	
50/3	XXX	3	12	47	70	27	219882 (15IP; 3.0 Nm)
50/4	XXX	4	20	59	80	27	219882 (15IP; 3.0 Nm)
63/4	XXX	4	16	47	65	27	219882 (15IP; 3.0 Nm)
63/4L	XXX	4	28	81	93	27	219882 (15IP; 3.0 Nm)
63/5	XXX	5	25	59	75	27	219882 (15IP; 3.0 Nm)
80/5	XXX	5	30	70	90	32	219882 (15IP; 3.0 Nm)
100/6	XXX	6	42	81	93	40	219882 (15IP; 3.0 Nm)

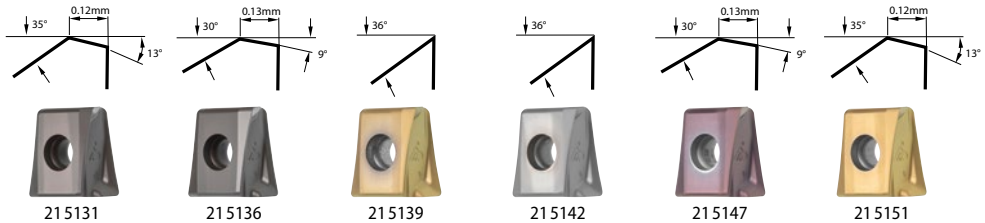


21 5126

Milling inserts LO.U130708.. for GARANT Power Tang 215122 / 215126

Note:
21 5131/5133/5147/5151 – Standard application values for $a_e = 0.3 \times D$ / $a_p = 10$ mm
21 5136–5142 – Standard application values for $a_e = 0.3 \times D$ / $a_p = 8$ mm

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 50 HRC	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	K						
21 5131				255	190	160	130	90											○	○	●	●	
21 5133				190	150	125	95	65						100	85				○	○	●	●	
21 5136							135	95	45								250		○	○	●	●	
21 5139														120	95	45			●	●	○	○	
21 5142														130	105	50			●	●	○	○	
21 5147																	300		●	●	●	●	
21 5151				200	160	130	100	70						110	90	40	200	●	●	●	●	●	



21 5131 21 5136 21 5139 21 5142 21 5147 21 5151

Type			ST900	ST1400	INOX	TI	GG	UNI	
21A 21 5131	LOEU 130708 TR-M	HB7525	XXX	–	–	–	–	–	10
21A 21 5133	LOMU 130708 TR-M	HB9520	XXX	–	–	–	–	–	10
21A 21 5136	LOEU 130708 TR-H	HB7515	–	XXX	–	–	–	–	10
21A 21 5139	LOEU 130708 R-L	HB7635	–	–	XXX	–	–	–	10
21A 21 5142		HB7940	–	–	–	XXX	–	–	10
21A 21 5147	LOEU 130708 TR-H	HB7710	–	–	–	–	XXX	–	10
21A 21 5151	LOEU 130708 TR-M	HB735	–	–	–	–	–	XXX	10
f_z		mm	0.2	0.22	0.14	0.12	0.24	–	

90° POWER CARD Garant

GARANT Power Tang 90° high performance tangential end mill for LO.U0904..

Single-row

Maximum stability due to tangentially arranged inserts.
High feed rate values for maximum metal removal rate due to optimum indexable insert with stability in the direction of the cutting force.

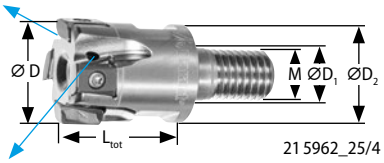
Note: Use GARANT torque screwdriver TQ No. **211750 size 1.2** with bit No. **674252 size 8IP**.

21 5956_25/4

21 5952_25/3

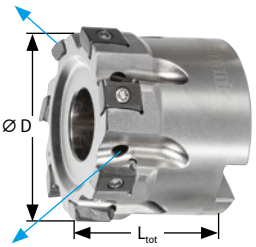
Ø D / number of effective cutting edges Z	210 21 5950	210 21 5952	$a_{p\,max}$	L_1	L_{tot}		Ø D_s h6	Pack of insert screws
	Power Tang 90° high performance tangential end mill							
	wide pitch				21 5950	21 5952		
mm	Weldon shank	Plain shank	mm	mm	mm	mm	mm	
20/2	XXX	XXX	8	30	101	160	20	219868 2 (8IP; 1.2 Nm)
25/3	XXX	XXX	8	30	105	180	25	219868 2 (8IP; 1.2 Nm)
32/3	XXX	XXX	8	30	105	200	32	219868 2 (8IP; 1.2 Nm)

Ø D / number of effective cutting edges Z	210 21 5954	210 21 5956	$a_{p\,max}$	L_1		L_{tot}		Ø D_s h6	Pack of insert screws
	Power Tang 90° high performance tangential end mill								
	close pitch			21 5954	21 5956	21 5954	21 5956		
mm	Weldon shank	Plain shank	mm	mm	mm	mm	mm	mm	
16/2	XXX	XXX	8	25	30	90	90	16	219868 1 (8IP; 1.2 Nm)
20/3	XXX	XXX	8	30	30	90	110	20	219868 2 (8IP; 1.2 Nm)
25/4	XXX	XXX	8	30	30	105	120	25	219868 2 (8IP; 1.2 Nm)
32/5	XXX	XXX	8	30	30	105	130	32	219868 2 (8IP; 1.2 Nm)



21 5962_25/4

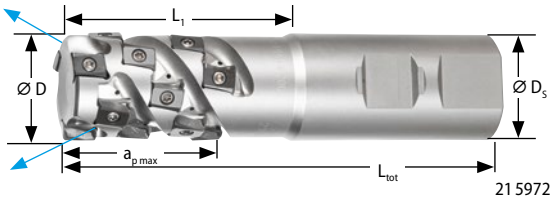
Ø D / number of effective cutting edges Z	210 21 5960	210 21 5962	$a_{p\,max}$	L_{tot}	Ø D_1 h6	Ø D_2	Mounting thread M	Pack of insert screws
	Power Tang 90° high performance tangential end mill							
	wide pitch with thread	close pitch with thread						
mm			mm	mm	mm	mm		
16/2	–	XXX	8	23	8.5	13.5	8	219868 1 (8IP; 1.2 Nm)
20/2	XXX	–	8	28	10.5	18.5	10	219868 2 (8IP; 1.2 Nm)
20/3	–	XXX	8	28	10.5	18.5	10	219868 2 (8IP; 1.2 Nm)
25/3	XXX	–	8	30	12.5	23	12	219868 2 (8IP; 1.2 Nm)
25/4	–	XXX	8	30	12.5	23	12	219868 2 (8IP; 1.2 Nm)
32/3	XXX	–	8	35	17	30	16	219868 2 (8IP; 1.2 Nm)
32/5	–	XXX	8	35	17	30	16	219868 2 (8IP; 1.2 Nm)



21 5968_50/7

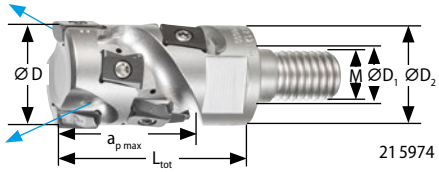
Ø D / number of effective cutting edges Z	210 21 5966	210 21 5968	$a_{p\,max}$	L_{tot}	Mounting bore Ø	Pack of insert screws
	Power Tang 90° high performance tangential end mill					
	wide pitch with bore	close pitch with bore				
mm			mm	mm	mm	
40/4	XXX	–	8	40	16	219868 2 (8IP; 1.2 Nm)
40/6	–	XXX	8	40	16	219868 2 (8IP; 1.2 Nm)
50/5	XXX	–	8	40	22	219868 2 (8IP; 1.2 Nm)
50/7	–	XXX	8	40	22	219868 2 (8IP; 1.2 Nm)
63/7	XXX	–	8	40	27	219868 2 (8IP; 1.2 Nm)
63/9	–	XXX	8	40	27	219868 2 (8IP; 1.2 Nm)

Multi-row



21 5972

Ø D / Zeff mm	210 21 5972 Power Tang 90° high performance tangential end mill **Weldon shank**	number of effective inserts eff	Number of inserts	ap max mm	L1 mm	Ltot mm	Ø Ds h6 mm	Pack of insert screws
25/2	XXX	2	10	39	54	112	25	219868 2 (8IP; 1.2 Nm)
32/3	XXX	3	18	47	69	131	32	219868 2 (8IP; 1.2 Nm)
40/4	XXX	4	24	47	69	131	32	219868 2 (8IP; 1.2 Nm)



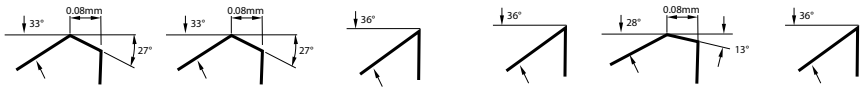
21 5974

Ø D / Zeff mm	210 21 5974 Power Tang 90° high performance tangential end mill **with thread**	number of effective inserts eff	Number of inserts	ap max mm	Ltot mm	Ø D1 h6 mm	Ø D2 mm	Mounting thread M	Pack of insert screws
25/2	XXX	2	8	32	45	12.5	23	M12	219868 2 (8IP; 1.2 Nm)
32/3	XXX	3	15	39	50	17	30	M16	219868 2 (8IP; 1.2 Nm)

Garant Milling inserts LO.U0904.. for GARANT Power Tang 215950 - 215974

Note:
21 5990 – Standard application values for $a_e = 0.3 \times D$ / $a_p = 3.5$mm
21 5980–5982/5992–5996 – Standard application values for $a_e = 0.3 \times D$ / $a_p = 4.5$mm
21 5986/5988 – Standard application values for $a_e = 0.3 \times D$ / $a_p = 4$mm

Suitable for/ vc [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 50 HRC	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	K						
21 5980				**280**	**210**	**175**	145	100											○	○	●	●	
21 5982				**210**	**165**	**140**	105	70						100	95				○	○	●	●	
21 5986							**150**	**105**	50								275		○	○	●	●	
21 5988														**130**	**105**	50			●	●	○	○	
21 5990														145	115	**55**			●	●	○	○	
21 5992																	**330**		●	●	●	●	
21 5994/5996				**220**	**175**	**145**	**110**	**75**						**120**	**100**	**45**	**220**	●	●	●	●	●	



21 5980 21 5986 21 5988 21 5990 21 5992 21 5994

Type			ST900	ST1400	INOX	TI	GG	UNI	
21A 21 5980	LOEU090408 TR-M	HB7525	XXX	–	–	–	–	–	10
21A 21 5982	LOMU090408 TR-M	HB9520	XXX	–	–	–	–	–	10
21A 21 5986	LOEU090408 TR-M	HB7515	–	XXX	–	–	–	–	10
21A 21 5988	LOEU090408 R-L	HB7635	–	–	XXX	–	–	–	10
21A 21 5990		HB7940	–	–	–	XXX	–	–	10
21A 21 5992	LOEU090408 TR-H	HB7710	–	–	–	–	XXX	–	10
21A 21 5994	LOEU090404 R-L	HB735	–	–	–	–	–	XXX	10
21A 21 5996	LOEU090408 TR-M	HB735	–	–	–	–	–	XXX	10
f_z		mm	0.11	0,1	0.08	0.07	0.13	–	

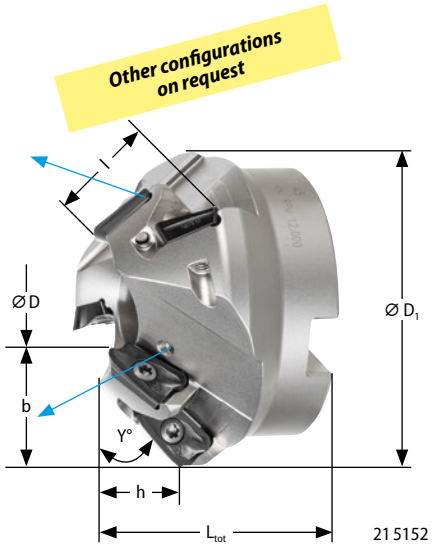
MTC POWER CARD

Softcut® high-performance chamfer mill for AP.T 1805..

Robust plug-in chamfer mill. Insert seat enclosed on several sides for stabilisation of the cutters and to take up the vertical and radial forces.

Application: For wide chamfers in steel fabrications. Outstandingly suitable for roughing and semi-roughing applications.

Note: Stepless surfaces are achieved.
Use GARANT torque screwdriver TQ No. **211750 size 3.8** with bit No. **674252 size 15IP**.



γ°	75	60	45	30	15
Correction factor fz	1	1,2	1,4	2	3,5

Angle γ	210 21 5152 Softcut® indexable chamfer mill MTC with bore	number of effective inserts $_{eff}$	Number of inserts	L_{tot}	smallest Ø D	largest Ø D_1	achievable chamfer width b	achievable chamfer length l	achievable chamfer height h	Mounting bore Ø	Feed rate per tooth at h_{max}	Pack of insert screws
degrees				mm	mm	mm	mm	mm	mm	mm	mm	
15	XXX	3	6	50	35	92	27.8	29.5	7.5	27	0.4	219808 (15IP; 3.8 Nm)
30	XXX	3	6	50	35	85	24.3	29.5	14	27	0.2	219808 (15IP; 3.8 Nm)
45	XXX	3	6	50	35	76	20	29.5	20	27	0.14	219808 (15IP; 3.8 Nm)
60	XXX	3	6	50	35	64	14	29.5	24.3	27	0.12	219808 (15IP; 3.8 Nm)
75	XXX	3	6	60	35	50	7.5	29.5	27.8	22	0.11	219808 (15IP; 3.8 Nm)

90° MTC POWER CARD

Softcut® high-performance indexable milling cutter 90° MTC for indexable inserts AP.T 1805..

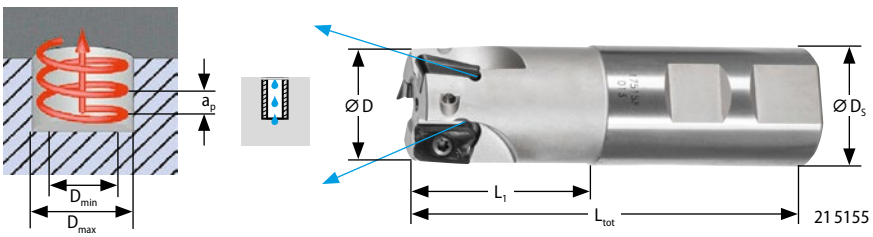
High precision square shoulder milling cutter with irregular pitch for very smooth cutting, very high precision and cutting power. High performance indexable square shoulder milling cutter **with special geometry for reduced cutting forces for MTC applications** under **unstable conditions** or **for spindles with low drive power.**

Application: For face milling to large depths, also slotting. General use in all steels including stainless steels.
Especially for **MTC (Multi Task Cutting)** use on the new generation of turning / milling centres **(MTM).**

Note: Use GARANT torque screwdriver TQ No. **211750 size 3.8** with bit No. **674252 size 15IP**.
The insert pocket must be modified when using indexable inserts with a radius greater than 3.1 mm.

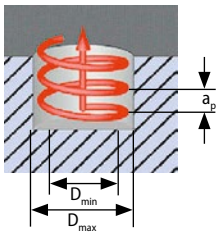
Single-row

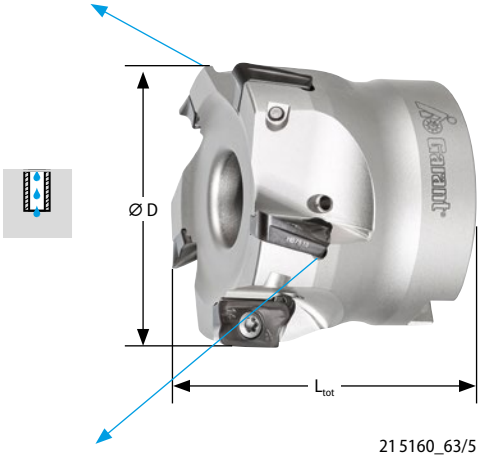
21 5157 – Without internal cooling.



Ø D / number of teeth Z	210 21 5155 Softcut® 90° indexable milling cutter MTC short Weldon shank	210 21 5157 MTC long Plain shank	L_1		L_{tot}		Ø D_s h6	Circular interpolation milling Ø D_{min}	Circular interpolation milling Ø D_{max}	Circular interpolation milling a_p	Ramping angle α_{max}	Ramping length L for α_{max}	suitable indexable insert	Pack of insert screws
			21 5155	21 5157	21 5155	21 5157								
mm			mm	mm	mm	mm	mm	mm	mm	mm	degrees	mm		
25/2	XXX	XXX	44	45	100	200	25	31.3	47	1	3.7	139.2	AP.. 1805..	219824 (15IP; 3,8 Nm)
32/3	XXX	XXX	50	50	110	250	32	45.4	62.5	1	2.6	198.2	AP.. 1805..	219824 (15IP; 3,8 Nm)
40/4	XXX	–	55	–	115	–	32	61.4	78.5	1	1.8	286.4	AP.. 1805..	219808 (15IP; 3.8 Nm)

Size 160/10 – For arbors to DIN 2079, with 4 additional attachment holes.
Without internal cooling.

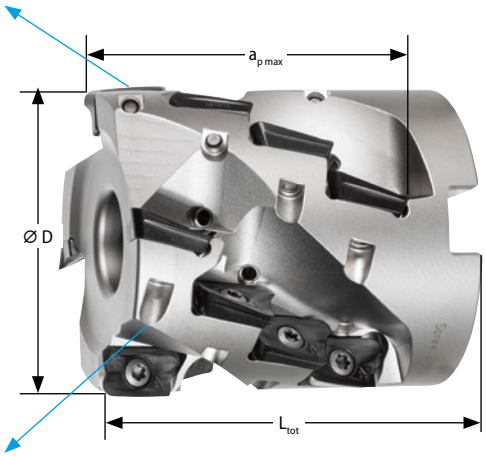




21 5160_63/5

Ø D / number of teeth Z	210 21 5160 Softcut® 90° indexable milling cutter MTC with bore	L_{tot}	Mounting bore Ø	Circular interpolation milling Ø D_{min}	Circular interpolation milling Ø D_{max}	Circular interpolation milling a_p	Ramping angle α_{max}	Ramping length L for α_{max}	suitable indexable insert	Pack of insert screws
mm		mm	mm	mm	mm	mm	degrees	mm		
40/3	XXX	40	16	61.4	78.5	1	1.8	286.4	AP.. 1805..	219808 (15IP; 3.8 Nm)
40/4	XXX	40	16	61.4	78.5	1	1.8	286.4	AP.. 1805..	219808 (15IP; 3.8 Nm)
50/4	XXX	40	22	81.4	98.5	0.9	1.3	396.6	AP.. 1805..	219808 (15IP; 3.8 Nm)
50/5	XXX	40	22	81.4	98.5	0.9	1.3	396.6	AP.. 1805..	219808 (15IP; 3.8 Nm)
52/5	XXX	40	22	85.4	102.5	0.9	1.2	429.7	AP.. 1805..	219808 (15IP; 3.8 Nm)
63/5	XXX	50	27	107.4	124.5	0.8	0.7	736.6	AP.. 1805..	219808 (15IP; 3.8 Nm)
63/6	XXX	50	27	107.4	124.5	0.8	0.7	736.6	AP.. 1805..	219808 (15IP; 3.8 Nm)
66/6	XXX	50	27	113.4	130.5	0.8	0.7	736.6	AP.. 1805..	219808 (15IP; 3.8 Nm)
80/6	XXX	50	27	141.5	158.5	0.8	0.6	859.4	AP.. 1805..	219808 (15IP; 3.8 Nm)
80/7	XXX	50	27	141.5	158.5	0.8	0.6	859.4	AP.. 1805..	219808 (15IP; 3.8 Nm)
100/7	XXX	50	32	181.5	198.5	0.85	0.5	1031.3	AP.. 1805..	219808 (15IP; 3.8 Nm)
100/8	XXX	50	32	181.5	198.5	0.85	0.5	1031.3	AP.. 1805..	219808 (15IP; 3.8 Nm)
125/8	XXX	63	40	231.5	248.5	0.85	0.4	1289.1	AP.. 1805..	219808 (15IP; 3.8 Nm)
125/9	XXX	63	40	231.5	248.5	0.85	0.4	1289.1	AP.. 1805..	219808 (15IP; 3.8 Nm)
160/10	XXX	63	40	301.5	318.5	0.85	0.3	1718.9	AP.. 1805..	219808 (15IP; 3.8 Nm)

Multi-row



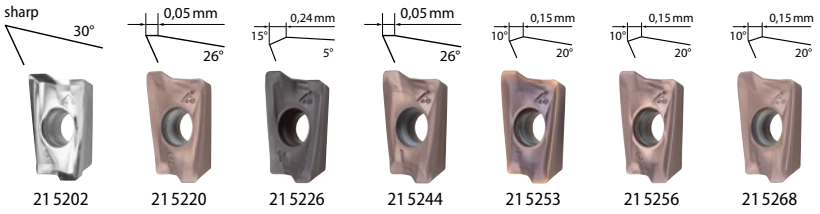
21 5161_63/4

Ø D / Z_{eff}	210 21 5161 Softcut® 90° indexable milling cutter MTC with bore	number of effective inserts $_{eff}$	Number of inserts	$a_{p\,max}$	L_{tot}	Mounting bore Ø	Pack of insert screws
mm				mm	mm	mm	
50/3	XXX	3	12	55	72	22	219808 (15IP; 3.8 Nm)
50/4	XXX	4	8	28	50	22	219808 (15IP; 3.8 Nm)
63/4	XXX	4	16	55	72	27	219808 (15IP; 3.8 Nm)
63/5	XXX	5	10	28	50	27	219808 (15IP; 3.8 Nm)
80/5	XXX	5	20	55	82	32	219808 (15IP; 3.8 Nm)
80/6	XXX	6	12	28	50	32	219808 (15IP; 3.8 Nm)

Garant Milling inserts AP.T 1805.. for Softcut® milling cutters No. 215152 – 215161

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	Graphite GRP CRP	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	M	M	S	K	N						
21 5202–21 5212	600	500	400																○		●		
21 5214	600	600	550														●		○		●		
21 5220				340	300	260													○		●		
21 5223–21 5229							220	200											○		●		
21 5231–21 5242							170	150											○		●		
21 5243–21 5252/ 5255/5280–21 5285													170	130					○		●		
21 5253/5254															40				○		●		
21 5256/5257																250			○		●		
21 5262–21 5277				330	290	250							150	120				●	○		●		

Note: Standard application values for $a_e = 0.3 \times D$ / $a_p = 5$ mm, $a_{p\,max} = 9$ mm.



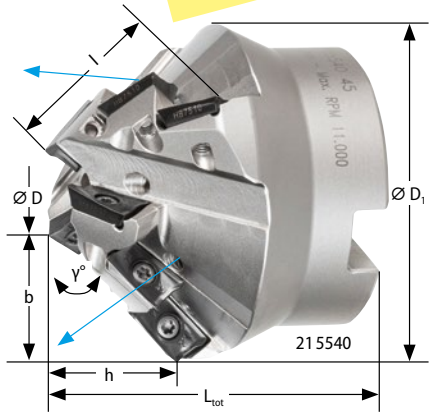
21 5202 | 21 5220 | 21 5226 | 21 5244 | 21 5253 | 21 5256 | 21 5268

Type			ALU	ST900	ST1400	INOX	TI	GG	UNI	
21A 21 5202	APET 180505 FR	HU7810	XXX	–	–	–	–	–	–	10
21A 21 5208	APET 180508 FR	HU7810	XXX	–	–	–	–	–	–	10
21A 21 5210	APET 180520 FR	HU7810	XXX	–	–	–	–	–	–	10
21A 21 5211	APET 180531 FR	HU7810	XXX	–	–	–	–	–	–	10
21A 21 5212	APET 180540 FR	HU7810	XXX	–	–	–	–	–	–	10
21B 21 5214	APET 180508 FR **diamond-coated**	HB7810	XXX	–	–	–	–	–	–	1
21A 21 5220	APMT 180508 ER	HB7520	–	XXX	–	–	–	–	–	10
21A 21 5225	APMT 180504 SR	HB7510	–	–	XXX	–	–	–	–	10
21A 21 5226	APMT 180508 SR	HB7510	–	–	XXX	–	–	–	–	10
21A 21 5227	APMT 180512 SR	HB7510	–	–	XXX	–	–	–	–	10
21A 21 5223	APMT 180516 SR	HB7510	–	–	XXX	–	–	–	–	10
21A 21 5228	APMT 180520 SR	HB7510	–	–	XXX	–	–	–	–	10
21A 21 5224	APMT 180524 SR	HB7510	–	–	XXX	–	–	–	–	10
21A 21 5229	APMT 180531 SR	HB7510	–	–	XXX	–	–	–	–	10
21A 21 5231	APMT 180504 SR	HB7520	–	–	XXX	–	–	–	–	10
21A 21 5232	APMT 180508 SR	HB7520	–	–	XXX	–	–	–	–	10
21A 21 5238	APMT 180512 SR	HB7520	–	–	XXX	–	–	–	–	10
21A 21 5240	APMT 180516 SR	HB7520	–	–	XXX	–	–	–	–	10
21A 21 5239	APMT 180520 SR	HB7520	–	–	XXX	–	–	–	–	10
21A 21 5242	APMT 180524 SR	HB7520	–	–	XXX	–	–	–	–	10
21A 21 5241	APMT 180531 SR	HB7520	–	–	XXX	–	–	–	–	10
21A 21 5243	APMT 180504 ER	HB7630	–	–	–	XXX	–	–	–	10
21A 21 5244	APMT 180508 ER	HB7630	–	–	–	XXX	–	–	–	10
21A 21 5250	APMT 180512 ER	HB7630	–	–	–	XXX	–	–	–	10
21A 21 5251	APMT 180516 ER	HB7630	–	–	–	XXX	–	–	–	10
21A 21 5252	APMT 180520 ER	HB7630	–	–	–	XXX	–	–	–	10
21A 21 5255	APMT 180524 ER	HB7630	–	–	–	XXX	–	–	–	10
21A 21 5280	APMT 180504 ER	HB8630	–	–	–	XXX	–	–	–	10
21A 21 5281	APMT 180508 ER	HB8630	–	–	–	XXX	–	–	–	10
21A 21 5282	APMT 180512 ER	HB8630	–	–	–	XXX	–	–	–	10
21A 21 5283	APMT 180516 ER	HB8630	–	–	–	XXX	–	–	–	10
21A 21 5284	APMT 180520 ER	HB8630	–	–	–	XXX	–	–	–	10
21A 21 5285	APMT 180524 ER	HB8630	–	–	–	XXX	–	–	–	10
21A 21 5253		HB7930	–	–	–	–	XXX	–	–	10
21A 21 5254	APMT 180508 ER	HB7935	–	–	–	–	XXX	–	–	10
21A 21 5256		HB7730	–	–	–	–	–	XXX	–	10
21A 21 5257	APMT 180512 ER	HB7730	–	–	–	–	–	XXX	–	10
21A 21 5262	APMT 180508 TR	HB7520	–	–	–	–	–	–	XXX	10
21A 21 5268	APMT 180512 TR	HB7520	–	–	–	–	–	–	XXX	10
21A 21 5274	APMT 180516 TR	HB7520	–	–	–	–	–	–	XXX	10
21A 21 5275	APMT 180520 TR	HB7520	–	–	–	–	–	–	XXX	10
21A 21 5277	APMT 180524 TR	HB7520	–	–	–	–	–	–	XXX	10
21A 21 5276	APMT 180531 TR	HB7520	–	–	–	–	–	–	XXX	10
f_z		mm	0.2	0.15	0.25	0.2	0.17	0.2	–	

MTC | POWER CARD

Softcut® high-performance chamfer mill for AP.T 1335..

Other configurations on request



Robust plug-in chamfer mill. Insert seat enclosed on several sides for stabilisation of the cutters and to take up the vertical and radial forces.

Application: For wide chamfers in steel fabrications.
Outstandingly suitable for roughing and semi-roughing applications.

Note: Stepless surfaces are achieved with indexable inserts No. 215321 – 215398.
GARANT torque screwdriver TQ No. **211750 size 2.2**, use bit No. **674252 size 8IP**.

γ°	75	60	45	30	15
Correction factor fz	1	1.2	1.4	2	3.5

Angle γ	210 21 5540 Softcut® indexable chamfer mill MTC with bore	number of effective inserts Z_{eff}	Number of inserts	L_{tot}	smallest Ø D	largest Ø D_1	achievable chamfer width b	achievable chamfer length l	achievable chamfer height h	Mounting bore Ø	Feed rate per tooth at h_{max}	Pack of insert screws
degrees				mm	mm	mm	mm	mm	mm	mm	mm	
15	XXX	3	9	52	17	75	28.5	29.5	7.6	22	0.4	219826 (8IP; 2.2 Nm)
30	XXX	3	9	52	17	69	25.5	29.5	14.7	22	0.2	219826 (8IP; 2.2 Nm)
45	XXX	3	9	52	17	59	20.8	29.5	20.8	22	0.14	219826 (8IP; 2.2 Nm)
60	XXX	3	9	52	17	47	14.7	29.5	25.5	16	0.12	219826 (8IP; 2.2 Nm)
75	XXX	3	9	60	19	35	7.6	29.5	28.5	16	0.11	219826 (8IP; 2.2 Nm)

90° | MTC | POWER CARD

Softcut® high-performance indexable milling cutter 90° MTC for indexable inserts AP.T 1335..

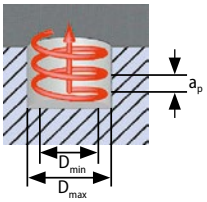
High precision indexable face mill with irregular pitch for very smooth cutting, very high precision, and very high metal removal rate.
New generation of high performance indexable face mills **with special geometry for reduced cutting forces for MTC applications** under **unstable conditions** or **for spindles with low drive power.**

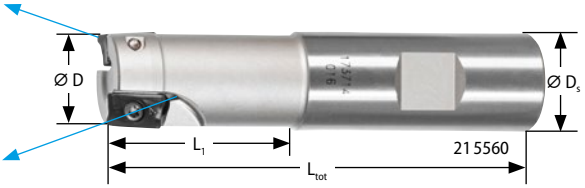
Application: For face milling to large depths, also slotting. General use in all steels including stainless steels.

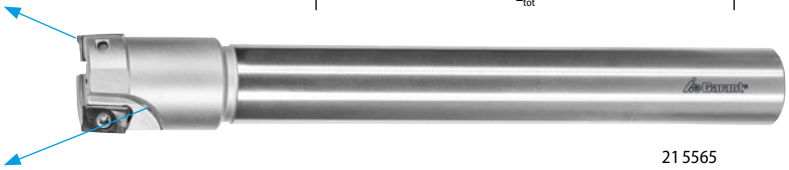
Spare part: Pack of insert screws No. 219826 (8IP; 2.2 Nm).

Note: The insert pocket must be modified when using indexable inserts with a radius greater than 2 mm.
GARANT torque screwdriver TQ No. **211750 size 2.2**, use bit No. **674252 size 8IP**.

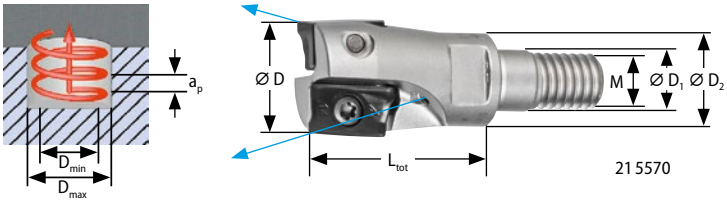
Single-row





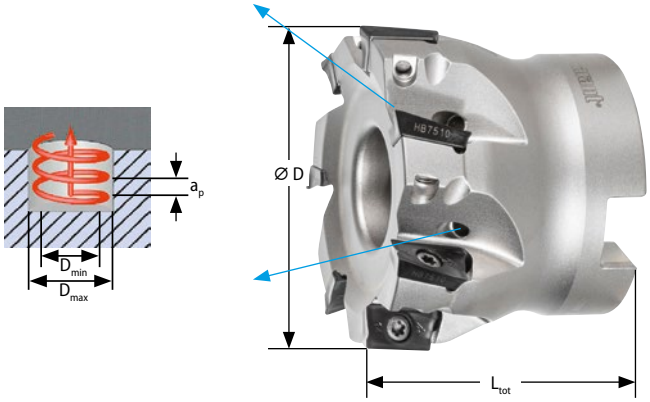


Ø D / number of teeth Z	210 21 5560 Softcut® 90° indexable milling cutter MTC Weldon shank	210 21 5565 Softcut® 90° indexable milling cutter MTC Plain shank	L_1		L_{tot}		Ø D_s h6		Circular interpolation milling Ø D_{min}	Circular interpolation milling Ø D_{max}	Circular interpolation milling a_p	Ramping angle α_{max}	Ramping length L for α_{max}
			21 5560	21 5565	21 5560	21 5565	21 5560	21 5565					
mm			mm	mm	mm	mm	mm	mm	mm	mm	mm	degrees	mm
14/1	XXX	–	37	–	85	–	16	–	16.1	27.1	0.8	6.9	74.4
16/2	XXX	XXX	37	50	85	140	16	16	19.4	31.1	1.2	6.3	81.5
18/2	XXX	XXX	40	30	90	140	20	16	23.2	35.1	1.7	6.1	84.2
20/2L	–	XXX	–	30	–	160	–	18	27.1	39.1	1.7	4.4	117
20/2	XXX	XXX	40	50	90	160	20	20	27.1	39.1	1.7	4.4	117
20/3	XXX	XXX	40	25	90	160	20	16	27.1	39.1	1.7	4.4	117
25/2L	–	XXX	–	35	–	180	–	20	37.1	49.1	1.9	2.9	117.7
25/2	–	XXX	–	60	–	180	–	25	37.1	49.1	1.9	2.9	117.7
25/3	XXX	XXX	49	30	105	180	25	16	37.1	49.1	1.9	2.9	117.7
25/4	XXX	XXX	49	25	105	180	25	20	37.1	49.1	1.9	2.9	117.7
32/3L	–	XXX	–	40	–	210	–	30	51	63.1	1.9	1.9	271.3
32/3	–	XXX	–	70	–	210	–	32	51	63.1	1.9	1.9	271.3
32/5	XXX	–	50	–	110	–	32	–	51	63.1	1.9	1.9	271.3



21 5570

Ø D / number of teeth Z	210 21 5570 Softcut® 90° indexable milling cutter MTC with threaded shank	Ø D_1 h6	L_{tot}	Ø D_2	Mounting thread M	Circular interpolation milling Ø D_{min}	Circular interpolation milling Ø D_{max}	Circular interpolation milling a_p	Ramping angle α_{max}	Ramping length L for α_{max}
mm		mm	mm	mm		mm	mm	mm	degrees	mm
15,7/2	XXX	8.5	26	12.7	M8	19.4	31.1	1.2	6.3	81.5
16/2	XXX	8.5	26	12.7	M8	19.4	31.1	1.2	6.3	81.5
19,7/3	XXX	10.5	30	17.7	M10	27.1	39.1	1.7	4.4	117
20/3	XXX	10.5	30	17.7	M10	27.1	39.1	1.7	4.4	117
24,7/4	XXX	12.5	35	20.7	M12	37.1	49.1	1.9	2.9	177.7
25/3	XXX	12.5	35	20.7	M12	37.1	49.1	1.9	2.9	177.7
25/4	XXX	12.5	35	20.7	M12	37.1	49.1	1.9	2.9	177.7
32/4	XXX	17	40	28.7	M16	51	63.1	1.9	1.9	271.3
32/5	XXX	17	40	28.7	M16	51	63.1	1.9	1.9	271.3
40/4	XXX	17	40	28.7	M16	67	79.1	1.8	1.2	429.7
40/6	XXX	17	40	28.7	M16	67	79.1	1.8	1.2	429.7

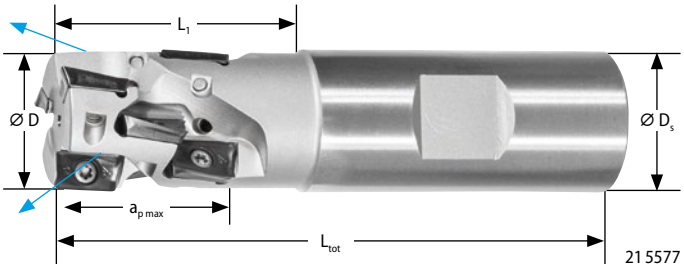


21 5575

Ø D / number of teeth Z	210 21 5575 Softcut® 90° indexable milling cutter MTC with bore	L_{tot}	Mounting bore Ø	Circular interpolation milling Ø D_{min}	Circular interpolation milling Ø D_{max}	Circular interpolation milling a_p	Ramping angle α_{max}	Ramping length L for α_{max}
mm		mm	mm	mm	mm	mm	degrees	mm
40/4	XXX	40	16	67	79.1	1.8	1.2	429.7
40/5	XXX	40	16	67	79.1	1.8	1.2	429.7
40/6	XXX	40	16	67	79.1	1.8	1.2	429.7
42/5	XXX	40	16	71	83.1	1.8	1.1	468.81
50/6	XXX	40	22	87	99.1	1.8	0.9	572.9
52/6	XXX	40	22	91	103.1	1.8	0.8	644.6
50/7	XXX	40	22	87	99.1	1.8	0.9	572.9
63/8	XXX	50	27	113	125.1	1.7	0.6	859.4
63/9	XXX	50	27	113	125.1	1.7	0.6	859.4
80/10	XXX	50	27	147	159.1	1.8	0.5	1031.3
100/12	XXX	50	32	187	191	2.1	0.4	1289.1

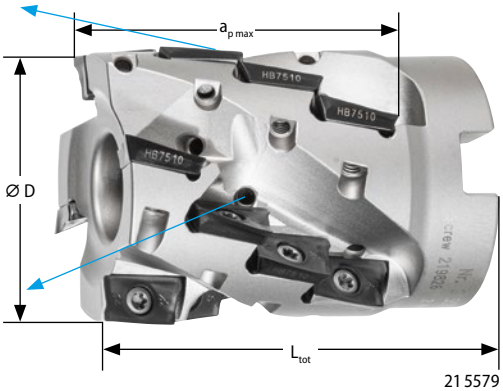
Multi-row

Note: **Not for ramping or circular plunging!**



21 5577

Ø D / Z_{eff}	210 21 5577 Softcut® 90° indexable milling cutter Weldon shank	number of effective inserts Z_{eff}	Number of inserts	$a_{p\,max}$	L_1	L_{tot}	Ø D_s h6	Pack of insert screws
mm				mm	mm	mm	mm	
20/2	XXX	2	6	30	45	95	20	219826 (8IP; 2.2 Nm)
25/2	XXX	2	6	30	45	101	25	219826 (8IP; 2.2 Nm)
25/3	XXX	3	9	30	45	101	25	219826 (8IP; 2.2 Nm)
32/3	XXX	3	12	40	52	112	32	219826 (8IP; 2.2 Nm)



21 5579

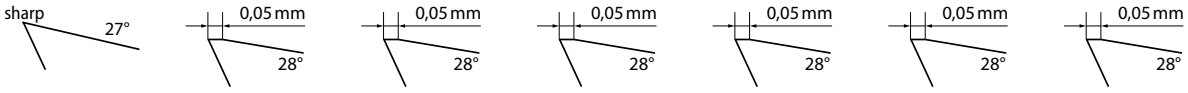
Ø D / Z_{eff}	210 21 5579 Softcut® 90° indexable milling cutter with bore	number of effective inserts Z_{eff}	Number of inserts	$a_{p\,max}$	L_{tot}	Mounting bore Ø	Pack of insert screws
mm				mm	mm	mm	
40/4	XXX	4	16	39.5	55	16	219826 (8IP; 2.2 Nm)
40/5	XXX	5	10	20	50	16	219826 (8IP; 2.2 Nm)
50/4	XXX	4	16	39.5	55	22	219826 (8IP; 2.2 Nm)
50/5	XXX	5	10	20	50	22	219826 (8IP; 2.2 Nm)

MTC milling inserts AP.T 1335.. for Softcut® indexable milling cutters No. 215540 – 215579

21 5314 – PCD milling insert with one cutting edge.

Note: Standard application values for $a_e = 0.25 \times D$ / $a_p = 4$ mm, $a_{p\,max} = 6$ mm.
21 5314 – **$a_{p\,max} = 3.5$ mm**

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	CuZn	Graphite GRP CRP	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	M	M	S	K	N	N						
21 5301–21 5303	**600**	**500**	**400**																	○		●	
21 5308	**600**	**600**	**550**														●			○		●	
21 5314	**1500**	**1500**	**1000**													**800**						●	
21 5321				**340**	**300**	**260**														○		●	
21 5325–21 5329							**220**	**200**												○		●	
21 5332–21 5344							**170**	**150**												○		●	
21 5349 / 5350 / 5356 / 5362 / 5363 / 5365 / 5364 / 5391 / 5392 / 5393 / 5394 / 5395 / 5397 / 5398												**170**	**130**							○		●	
21 5366/5370														**40**						○		●	
21 5368/5371															**250**					○		●	
21 5374–21 5389				**330**	**290**	**250**						**150**	**120**					●		○		●	



21 5302 21 5321 21 5325 21 5349 21 5366 21 5368 21 5374

Type			ALU	ST900	ST1400	INOX	TI	GG	UNI	
21A **21 5301**	APET 133502 FR	HU7810	XXX	–	–	–	–	–	–	10
21A **21 5302**	APET 133504 FR	HU7810	XXX	–	–	–	–	–	–	10
21A **21 5303**	APET 133508 FR	HU7810	XXX	–	–	–	–	–	–	10
21B **21 5308**	APET 133504 FR **diamond-coated**	HB7810	XXX	–	–	–	–	–	–	1
21L **21 5314**	APHT 133504 FR	PCD	XXX	–	–	–	–	–	–	1
21A **21 5321**	APMT 133504 ER	HB7520	–	XXX	–	–	–	–	–	10
21A **21 5325**	APMT 133504 SR	HB7510	–	–	XXX	–	–	–	–	10
21A **21 5326**	APMT 133508 SR	HB7510	–	–	XXX	–	–	–	–	10
21A **21 5327**	APMT 133512 SR	HB7510	–	–	XXX	–	–	–	–	10
21A **21 5328**	APMT 133516 SR	HB7510	–	–	XXX	–	–	–	–	10
21A **21 5331**	APMT 133520 SR	HB7510	–	–	XXX	–	–	–	–	10
21A **21 5329**	APMT 133524 SR	HB7510	–	–	XXX	–	–	–	–	10
21A **21 5332**	APMT 133504 SR	HB7520	–	–	XXX	–	–	–	–	10
21A **21 5338**	APMT 133508 SR	HB7520	–	–	XXX	–	–	–	–	10

Type			ALU	ST900	ST1400	INOX	TI	GG	UNI	
21A 21 5344	APMT 133512 SR	HB7520	–	–	XXX	–	–	–	–	10
21A 21 5349	APMT 133502 ER	HB7630	–	–	–	XXX	–	–	–	10
21A 21 5350	APMT 133504 ER	HB7630	–	–	–	XXX	–	–	–	10
21A 21 5356	APMT 133508 ER	HB7630	–	–	–	XXX	–	–	–	10
21A 21 5362	APMT 133512 ER	HB7630	–	–	–	XXX	–	–	–	10
21A 21 5363	APMT 133516 ER	HB7630	–	–	–	XXX	–	–	–	10
21A 21 5365	APMT 133520 ER	HB7630	–	–	–	XXX	–	–	–	10
21A 21 5364	APMT 133524 ER	HB7630	–	–	–	XXX	–	–	–	10
21A 21 5391	APMT 133502 ER	HB8630	–	–	–	XXX	–	–	–	10
21A 21 5392	APMT 133504 ER	HB8630	–	–	–	XXX	–	–	–	10
21A 21 5393	APMT 133508 ER	HB8630	–	–	–	XXX	–	–	–	10
21A 21 5394	APMT 133512 ER	HB8630	–	–	–	XXX	–	–	–	10
21A 21 5395	APMT 133516 ER	HB8630	–	–	–	XXX	–	–	–	10
21A 21 5397	APMT 133520 ER	HB8630	–	–	–	XXX	–	–	–	10
21A 21 5398	APMT 133524 ER	HB8630	–	–	–	XXX	–	–	–	10
21A 21 5366	APMT 133504 ER	HB7930	–	–	–	–	XXX	–	–	10
21A 21 5370	APET 133512 ER	HB7930	–	–	–	–	XXX	–	–	10
21A 21 5368	APMT 133504 ER	HB7730	–	–	–	–	–	XXX	–	10
21A 21 5371	APMT 133516 ER	HB7730	–	–	–	–	–	XXX	–	10
21A 21 5374	APMT 133504 TR	HB7520	–	–	–	–	–	–	XXX	10
21A 21 5381	APMT 133508 TR	HB7520	–	–	–	–	–	–	XXX	10
21A 21 5386	APMT 133512 TR	HB7520	–	–	–	–	–	–	XXX	10
21A 21 5387	APMT 133516 TR	HB7520	–	–	–	–	–	–	XXX	10
21A 21 5388	APMT 133520 TR	HB7520	–	–	–	–	–	–	XXX	10
21A 21 5389	APMT 133524 TR	HB7520	–	–	–	–	–	–	XXX	10
f_z		mm	0.2	0.15	0.15	0.18	0.13	0.18	–	

90° MTC POWER CARD

Softcut® high-performance indexable milling cutter 90° MTC for indexable inserts AP.T 0602..

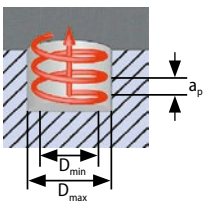
High precision indexable face mill with irregular pitch for very smooth cutting, very high precision and very high metal removal rate. **New generation** of high performance indexable face mills **with special geometry for reduced cutting forces for MTC applications** under **unstable conditions** or **for spindles with low drive power. Suitable inserts APMT 0602..**

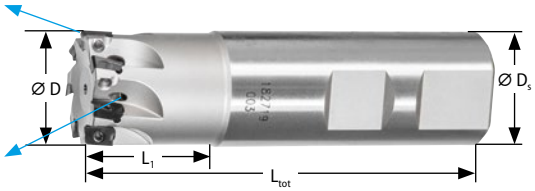
Application: For end milling including slotting. General use in all steels including stainless steels.

Spare part: Pack of insert screws No. 219827 (6IP; 0.45 Nm).

Note: GARANT torque screwdriver TQ No. **211750 size 0.45**, use bit No. **674252 size 6IP**.
The insert pocket must be modified when using indexable inserts with a radius of 2 mm.

Single-row

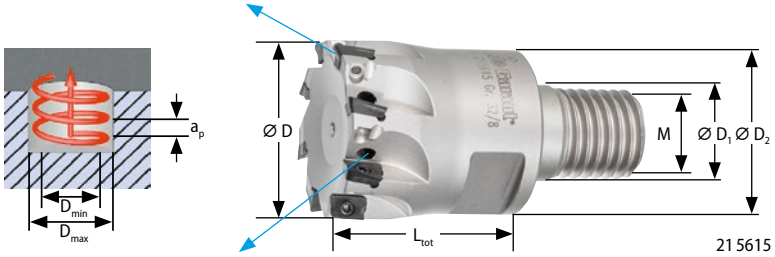




21 5605

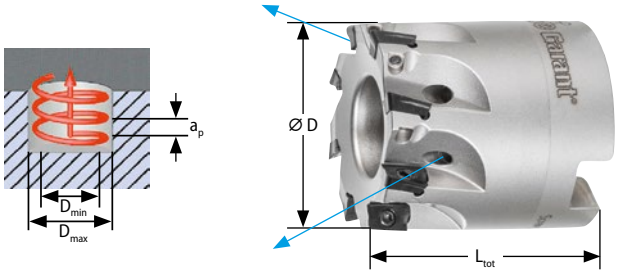
Ø D / number of teeth Z	21 5605	21 5609	L_1		L_{tot}		Ø D_s h6		Circular interpolation milling Ø D_{min}	Circular interpolation milling Ø D_{max}	Circular interpolation milling a_p	Ramping angle α_{max}	Ramping length L for α_{max}
	Softcut® 90° indexable milling cutter												
	MTC short	MTC long	21 5605	21 5609	21 5605	21 5609	21 5605	21 5609					
mm	Weldon shank	Plain shank	mm	mm	mm	mm	mm	mm	mm	mm	mm	degrees	mm
10/2L	–	XXX	–	17	–	100	–	8	12.6	19.3	0.7	4.9	47.1
10/2	–	XXX	–	17	–	57	–	10	12.6	19.3	0.7	4.9	47.1
12/2L	–	XXX	–	20	–	120	–	10	16.3	23.3	0.8	3.3	68.6
12/2	–	XXX	–	20	–	80	–	12	16.3	23.3	0.8	3.3	68.6
12/3	–	XXX	–	17	–	62	–	12	16.3	23.3	0.8	3.3	68.6
14/3L	–	XXX	–	20	–	145	–	12	20.3	27.3	0.9	2.6	87.2
16/3L	–	XXX	–	20	–	160	–	14	24.3	31.3	0.9	2	116.9
16/3	XXX	XXX	20	20	75	90	16	16	24.3	31.3	0.9	2	116.9
16/4	XXX	XXX	20	20	75	90	16	16	24.3	31.3	0.9	2	116.9
18/4L	–	XXX	–	20	–	180	–	16	28.3	35.3	0.9	1.6	140.1
20/4S	–	XXX	–	20	–	90	–	16	32.3	39.3	0.9	1.3	171.4

∅ D / number of teeth Z	210 21 5605	210 21 5609	L_1		L_{tot}		∅ D_s h6		Circular interpolation milling ∅ D_{min}	Circular interpolation milling ∅ D_{max}	Circular interpolation milling a_p	Ramping angle α_{max}	Ramping length L for α_{max}
	Softcut® 90° indexable milling cutter												
	MTC short	MTC long	21 5605	21 5609	21 5605	21 5609	21 5605	21 5609					
mm	Weldon shank	Plain shank	mm	mm	mm	mm	mm	mm	mm	mm	mm	degrees	mm
20/4L	–	XXX	–	25	–	200	–	18	32.3	39.3	0.9	1.3	171.4
20/4	XXX	XXX	25	22	85	105	20	20	32.3	39.3	0.9	1.3	171.4
20/5	–	XXX	–	22	–	105	–	20	32.3	39.3	0.9	1.3	171.4
25/7S	–	XXX	–	30	–	180	–	16	42.3	49.3	0.9	1	237.7
25/7	XXX	XXX	30	25	90	115	25	20	42.3	49.3	0.9	1	237.7
32/8	–	XXX	–	30	–	130	–	25	56.3	48	1.5	0.7	344.7
40/10	–	XXX	–	30	–	140	–	32	72.3	79.3	0.8	0.5	503.4



21 5615

∅ D / number of teeth Z	210 21 5615	∅ D_1 h6	L_{tot}	∅ D_2	Mounting thread M	Circular interpolation milling ∅ D_{min}	Circular interpolation milling ∅ D_{max}	Circular interpolation milling a_p	Ramping angle α_{max}	Ramping length L for α_{max}
	Softcut® 90° indexable milling cutter									
	MTC									
mm	with threaded shank	mm	mm	mm		mm	mm	mm	degrees	mm
10/2	XXX	6.5	20	9.4	M6	12.6	19.3	0.7	4.9	47.1
12/3	XXX	6.5	20	10.7	M6	16.3	23.3	0.8	3.3	68.6
16/4	XXX	8.5	23	12.7	M8	24.3	31.3	0.9	2	116.9
20/5	XXX	10.5	30	17.7	M10	32.3	39.3	0.9	1.3	171.4
25/7	XXX	12.5	35	20.7	M12	42.3	49.3	0.9	1	237.7
32/8	XXX	17	35	28.7	M16	56.3	63.3	0.9	0.7	344.7
40/10	XXX	17	35	28.7	M16	72.3	79.3	0.8	0.5	503.4

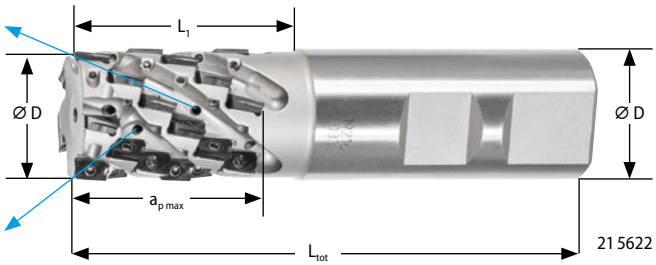


21 5620

∅ D / number of teeth Z	210 21 5620	L_{tot}	Mounting bore ∅	Circular interpolation milling ∅ D_{min}	Circular interpolation milling ∅ D_{max}	Circular interpolation milling a_p	Ramping angle α_{max}	Ramping length L for α_{max}
	Softcut® 90° indexable milling cutter							
	MTC							
mm	with bore	mm	mm	mm	mm	mm	degrees	mm
32/8	XXX	35	16	56.3	63.3	0.9	0.7	344.7
40/10	XXX	35	16	72.3	79.3	0.8	0.5	503.4
50/11	XXX	40	22	82.3	89.3	0.8	0.5	503.9
63/12	XXX	40	22	82.3	89.3	0.8	0.4	572.9

Multi-row

Note: **Not for ramping or circular plunging!**



21 5622

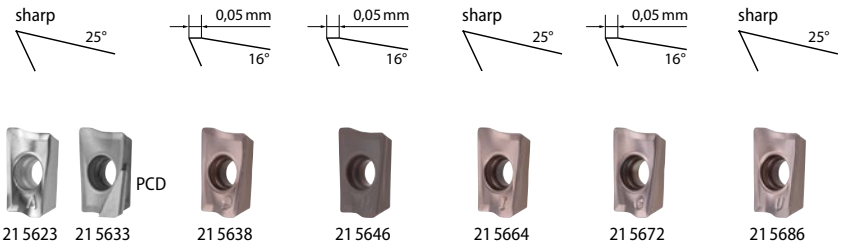
∅ D / Z_{eff}	210 21 5622	number of effective inserts Z_{eff}	Number of inserts	$a_{p\,max}$	L_1	L_{tot}	∅ D_s h6	Pack of insert screws
	Softcut® 90° indexable milling cutter							
mm	Weldon shank			mm	mm	mm	mm	
16/2	XXX	2	8	22.5	32	80	16	219827 (6IP; 0.45 Nm)
20/3	XXX	3	15	28	40	90	20	219827 (6IP; 0.45 Nm)
25/5	XXX	5	30	33.5	44	100	25	219827 (6IP; 0.45 Nm)

MTC milling inserts AP.T 0602.. for Softcut® indexable milling cutters No. 215605 – 215622

21 5633 – PCD milling insert with one cutting edge.

Note: Standard application values for $a_e = 0.25 \times D$. $a_p = 3$ mm, a_p max = 4 mm.
21 5633 – **$a_{p\,max} = 2.5$ mm.**

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	INOX < 900 N	INOX > 900 N	GG(G)	CuZn	Graphite GRP CRP	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	M	M	K	N	N						
21 5621–21 5626	600	500	400																○			●	
21 5630	600	600	550														●		○			●	
21 5633	1500	1500	1000													800			○			●	
21 5638/5641				340	300	260													○			●	
21 5643–21 5652							220	200											○			●	
21 5654–21 5659							170	150											○			●	
21 5663–21 5671													170	130					○			●	
21 5672/5674															250				○			●	
21 5680–21 5692				330	290	250							150	120				●	○			●	

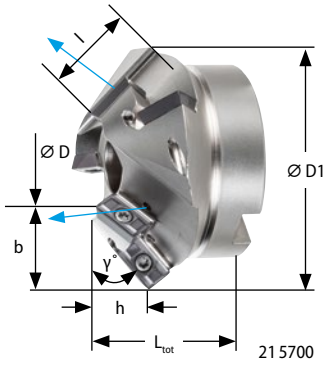


Type			ALU	ST900	ST1400	INOX	GG	UNI	
21A 21 5621	APMT 060202 FR	HU7810	XXX	–	–	–	–	–	10
21A 21 5623	APMT 060204 FR	HU7810	XXX	–	–	–	–	–	10
21A 21 5626	APMT 060220 FR	HU7810	XXX	–	–	–	–	–	10
21B 21 5630	APMT 060204 FR **diamond-coated**	HB7810	XXX	–	–	–	–	–	1
21L 21 5633	APHT 060204 FR	PCD	XXX	–	–	–	–	–	1
21A 21 5638	APMT 060204 ER	HB7520	–	XXX	–	–	–	–	10
21A 21 5641	APMT 060220 ER	HB7520	–	XXX	–	–	–	–	10
21A 21 5643	APMT 060202 ER	HB7510	–	–	XXX	–	–	–	10
21A 21 5646	APMT 060204 ER	HB7510	–	–	XXX	–	–	–	10
21A 21 5650	APMT 060208 ER	HB7510	–	–	XXX	–	–	–	10
21A 21 5652	APMT 060220 ER	HB7510	–	–	XXX	–	–	–	10
21A 21 5654	APMT 060202 ER	HB7520	–	–	XXX	–	–	–	10
21A 21 5656	APMT 060204 ER	HB7520	–	–	XXX	–	–	–	10
21A 21 5657	APMT 060208 ER	HB7520	–	–	XXX	–	–	–	10
21A 21 5659	APMT 060220 ER	HB7520	–	–	XXX	–	–	–	10
21A 21 5663	APMT 060202 ER	HB7630	–	–	–	XXX	–	–	10
21A 21 5664	APMT 060204 ER	HB7630	–	–	–	XXX	–	–	10
21A 21 5665	APMT 060208 ER	HB7630	–	–	–	XXX	–	–	10
21A 21 5667	APMT 060220 ER	HB7630	–	–	–	XXX	–	–	10
21A 21 5668	APMT 060202 ER	HB8630	–	–	–	XXX	–	–	10
21A 21 5669	APMT 060204 ER	HB8630	–	–	–	XXX	–	–	10
21A 21 5670	APMT 060208 ER	HB8630	–	–	–	XXX	–	–	10
21A 21 5671	APMT 060220 ER	HB8630	–	–	–	XXX	–	–	10
21A 21 5672	APMT 060204 ER	HB7730	–	–	–	–	XXX	–	10
21A 21 5674	APMT 060220 ER	HB7730	–	–	–	–	XXX	–	10
21A 21 5680	APMT 060202 ER	HB7520	–	–	–	–	–	XXX	10
21A 21 5686	APMT 060204 ER	HB7520	–	–	–	–	–	XXX	10
21A 21 5690	APMT 060208 ER	HB7520	–	–	–	–	–	XXX	10
21A 21 5692	APMT 060220 ER	HB7520	–	–	–	–	–	XXX	10
f_z		mm	0.1	0.1	0.1	0.08	0.08	–	

POWER CARD

Indexable chamfer mill for AP.. 1604..

Note:
- **Recommended milling inserts for chamfering: No. 215720; 215724; 215728; 215730; 215737; 215744; 215761.**
- If other milling inserts are used, the tool life may be less and surface quality may suffer.
- Use GARANT torque screwdriver TQ No. **211750 size 5.0** with bit No. **674252 size 15IP**.



21 5700

γ°	75	60	50	45	40	30	20	15
Correction factor f_z	1.0	1.2	1.3	1.4	1.6	2	3	3.5

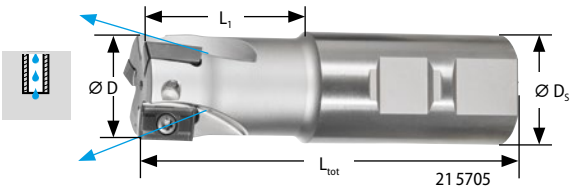
Angle γ	210 21 5700 Chamfer mill with bore	number of effective inserts Z_{eff}	Number of inserts	L_{tot}	smallest Ø D	largest Ø D_1	achievable chamfer width b	achievable chamfer length l	achievable chamfer height h	Mounting bore Ø	Feed rate per tooth at h_{max}	Pack of insert screws
Degrees				mm	mm	mm	mm	mm	mm	mm	mm	
15	XXX	3	6	50	35.4	94	29.5	30	8	27	0.4	219811 (15IP; 5,0 Nm)
20	XXX	3	6	50	35	91	28.5	30	10	27	0.3	219811 (15IP; 5,0 Nm)
30	XXX	3	6	50	35	84.6	26.5	30	15.1	27	0.2	219811 (15IP; 5,0 Nm)
40	XXX	3	6	50	35	84	24.5	30	19	27	0.16	219811 (15IP; 5,0 Nm)
45	XXX	3	6	50	35	77.8	21.4	30	21.4	27	0.14	219811 (15IP; 5,0 Nm)
50	XXX	3	6	50	35	73	18	30	23	27	0.13	219811 (15IP; 5,0 Nm)
60	XXX	3	6	50	34.8	65	15.1	30	26.5	27	0.12	219811 (15IP; 5,0 Nm)
75	XXX	3	6	60	35	50.7	8	30	29.5	22	0.11	219811 (15IP; 5,0 Nm)

90° POWER CARD

Indexable milling cutter 90° for AP.. 16..

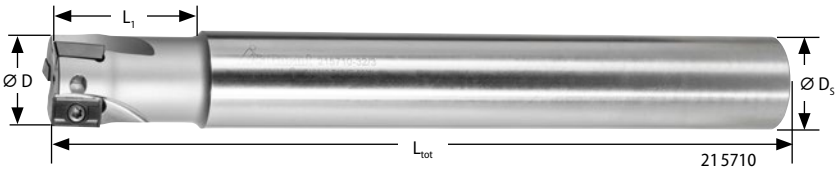
Indexable face mill with irregular pitch for very smooth cutting.

Note: Use GARANT torque screwdriver TQ No. **211750 size 5.0** with bit No. **674252 size 15IP**.



21 5705

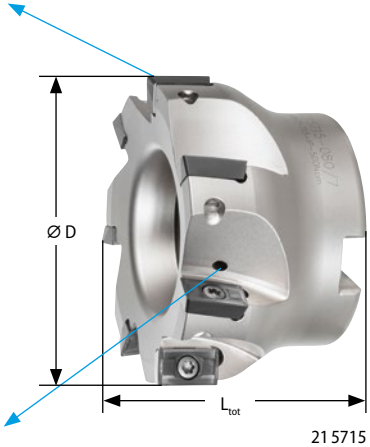
21 5710 – Without through-coolant feed.



21 5710

Ø D / number of teeth Z	210 21 5705 Indexable milling cutter 90° short Weldon shank	210 21 5710 Indexable milling cutter 90° long Plain shank	L_1	L_{tot} 21 5705	L_{tot} 21 5710	Ø D_s h6	suitable indexable insert	Pack of insert screws
mm			mm	mm	mm	mm		
25/2	XXX	XXX	44	100	200	25	AP.. 16..	219811 (15IP; 5,0 Nm)
32/3	XXX	XXX	50	110	250	32	AP.. 16..	219812 (15IP; 5.0 Nm)
40/4	XXX	–	55	115	–	32	AP.. 16..	219812 (15IP; 5.0 Nm)

Size 160/10 – For arbors to DIN 2079, with 4 additional attachment holes.
For technical reasons without internal coolant supply.



21 5715

Ø D / number of teeth Z	210 21 5715 Indexable milling cutter 90° with bore	L_{tot}	Mounting bore Ø	suitable indexable insert	Pack of insert screws
mm		mm	mm		
40/4	XXX	40	16	AP.. 16..	219812 (15IP; 5.0 Nm)
50/5	XXX	40	22	AP.. 16..	219812 (15IP; 5.0 Nm)
52/5	XXX	40	22	AP.. 16..	219812 (15IP; 5.0 Nm)
63/5	XXX	40	22	AP.. 16..	219812 (15IP; 5.0 Nm)
63/6	XXX	40	22	AP.. 16..	219812 (15IP; 5.0 Nm)
66/6	XXX	40	22	AP.. 16..	219812 (15IP; 5.0 Nm)
80/7	XXX	50	27	AP.. 16..	219812 (15IP; 5.0 Nm)
100/8	XXX	50	32	AP.. 16..	219812 (15IP; 5.0 Nm)
125/9	XXX	63	40	AP.. 16..	219812 (15IP; 5.0 Nm)
160/10	XXX	63	40	AP.. 16..	219812 (15IP; 5.0 Nm)

Milling inserts AP.. 16.. for indexable milling cutters No. 215700, 215705, 215710 and 215715

Note: Standard application values apply for milling cutters No. 215705 to 215715: $a_e = 0.3 \times D$ / $a_{p\,max} = 7$ mm.

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 67 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	CuZn	Graphite GRP CRP	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	M	M	S	K	N	N						
215720–215728	**700**	**500**	**350**																	●		○	
215730	**1200**	**1000**	**450**																	●		○	
215731/5733				**340**	**235**	**195**	190	175				220	140		150				●	●	●	●	●
215732				**250**	**250**	**185**	140					140	140							○		●	
215737						**200**	**160**	130											○			●	
215743/5745/5746				380	265	220	**210**	**195**				270	170		170				●	○	○	●	●
215744						170	**120**	**90**							**140**					○		●	
215747–215756	700	500	350	230	230	170	120	90				**160**	**150**	35						●		●	
215759/5762				**270**	**205**	**170**	**150**	**125**				**175**	**150**	50	140					●		●	
215760				**250**	**250**	**185**	140	110				**140**	140		**140**			●		○		●	
215761			250	**320**	**180**	**160**	120	80	60	50	30	**190**	180	40	**170**	280	80	●		○		●	
215763			220	**290**	**160**	**140**	110	70				**160**	150		**150**			●				●	

215724

215732

215744

215747

215761

Type				ALU	ST900	ST1100	ST1400	INOX	UNI		Worktop thickness mm
21A **21 5720**		APEX 160404 PDFR	**HU7710**	XXX	–	–	–	–	–	**10**	4.76
21A **21 5724**		APKT 16..04 PDFR	**HU7710**	XXX	–	–	–	–	–	**10**	5.05
21A **21 5728**		APKT 16..08 PDFR	**HU7710**	XXX	–	–	–	–	–	**10**	5.05
21A **21 5730**		APGT 1604 PDTR	**HB7805**	XXX	–	–	–	–	–	**10**	4.76
21A **21 5732**		APXT 16..08 PDSR	**HB7525**	–	XXX	–	–	–	–	**10**	5.76
21A **21 5731**		APMX 16..04 TR	**HB7525**	–	XXX	–	–	–	–	**10**	5.76
21A **21 5733**		APMX 16..08 TR	**HB7525**	–	XXX	–	–	–	–	**10**	5.76
21A **21 5737**		APKT 1604 PDTR	**HB8520**	–	–	XXX	–	–	–	**10**	4.76
21A **21 5744**		APFT 160408 PDTR	**HB7720**	–	–	–	XXX	–	–	**10**	4.76
21A **21 5743**		APMX 16..04 TR	**HB7515**	–	–	–	XXX	–	–	**10**	5.76
21A **21 5745**	Garant	APMX 16..08 TR	**HB7515**	–	–	–	XXX	–	–	**10**	5.76
21A **21 5746**		APMX 16..12 TR	**HB7515**	–	–	–	XXX	–	–	**10**	5.76
21A **21 5747**		APMX 16..04 PDER	**HB7635**	–	–	–	–	XXX	–	**10**	5.76
21A **21 5748**		APMX 16..08 PDER	**HB7635**	–	–	–	–	XXX	–	**10**	5.76
21A **21 5749**		APMX 16..12 PDER	**HB7635**	–	–	–	–	XXX	–	**10**	5.76
21A **21 5752**		APKX 16..16 PDER	**HB7635**	–	–	–	–	XXX	–	**10**	5.76
21A **21 5756**		APKX 16..24 PDER	**HB7635**	–	–	–	–	XXX	–	**10**	5.76
21A **21 5759**		APMX 16..08 TR	**HB735**	–	–	–	–	–	XXX	**10**	5.76
21A **21 5760**		APMX 16..08 PDTR	**HB7520**	–	–	–	–	–	XXX	**10**	5.76
21A **21 5761**		APKT 1604 PDTR	**HB720**	–	–	–	–	–	XXX	**10**	4.76
21A **21 5762**		APMX 16..12 TR	**HB735**	–	–	–	–	–	XXX	**10**	5.76
22A **21 5763**	HOLEX	APKT160410PDTR	**HBM020**	–	–	–	–	–	XXX	**10**	4.76 new
f_z			mm	0.18	0.18	0.15	0.14	0.15	–		

KENNAMETAL Milling inserts AP..T 1604.. for milling cutters No. 215705, 215710 and 215715

Note: Please use these indexable inserts **only with screw No. 229908 (15 IP; 5.0 Nm)**. The insert seating must be modified when indexable inserts with r ≥ 3.2 mm are used on mills No. 215705, 215710, 215715.

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	K						
215768																	**280**					●	
215771–215778				**250**	**200**	**170**	**130**	**110**						**180**	**155**	**45**	**200**	●		○		●	●
215780/5781						**150**	**110**							**170**	**150**	**55**	**180**	●		●	○	●	●

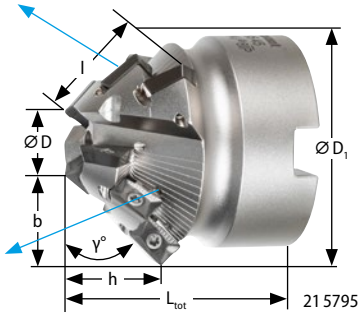
Type			GG	UNI	
28E **21 5768**	APKT 1604PDER-43	**SC3025**	XXX	–	**10**
28E **21 5771**	APHT 160408ER-46	**SP6519**	–	XXX	**10**
28E **21 5773**	APHT 160416ER-46	**SP6519**	–	XXX	**10**
28E **21 5775**	APHT 160424ER-46	**SP6519**	–	XXX	**10**
28E **21 5776**	APHT 160432ER-46	**SP6519**	–	XXX	**10**

Type			UNI	
28E **21 5777**	APHT 160440ER-46	**SP6519**	XXX	**10**
28E **21 5778**	APHT 160450ER-46	**SP6519**	XXX	**10**
28F **21 5780**	APKT 1604PDER-45	**X500**	XXX	**10**
28F **21 5781**	APHT 160408ER-46	**X500**	XXX	**10**

POWER CARD

Indexable chamfer mill for AP.. 1003..

Note: Use GARANT torque screwdriver TQ No. **211750 size 1.2** with bit No. **674252 size 8IP**.



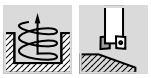
γ°	75	60	45	40	30	20	15
Correction factor fz	1	1.2	1.4	1.6	2	3	3.5

Angle γ	210 21 5795	number of effective inserts Z_{eff}	Number of inserts	L_{tot}	smallest Ø D	largest Ø D_1	achievable chamfer width b	achievable chamfer length l	achievable chamfer height h	Mounting bore Ø	Feed rate per tooth at h_{max}	Pack of insert screws
	Chamfer mills											
Degrees	with bore			mm	mm	mm	mm	mm	mm	mm	mm	
15	XXX	3	9	52	17	70	27	27.5	7	22	0.4	219814 (8IP; 1.2 Nm)
20	XXX	3	9	52	17	69	26	27.5	9	22	0.3	219814 (8IP; 1.2 Nm)
30	XXX	3	9	52	17	65	24	27.5	13	22	0.2	219814 (8IP; 1.2 Nm)
40	XXX	3	9	52	17	59	19	27.5	17.8	22	0.16	219814 (8IP; 1.2 Nm)
45	XXX	3	9	52	17	56	17.8	27.5	19	22	0.14	219814 (8IP; 1.2 Nm)
60	XXX	3	9	52	17	45	13	27.5	24	16	0.12	219814 (8IP; 1.2 Nm)
75	XXX	3	9	60	19	33	7	27.5	27	16	0.11	219814 (8IP; 1.2 Nm)

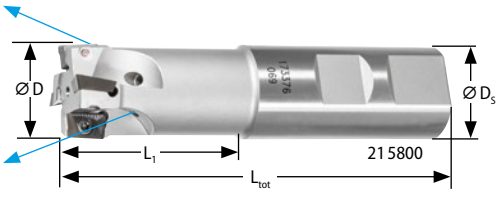
90° MTC POWER CARD

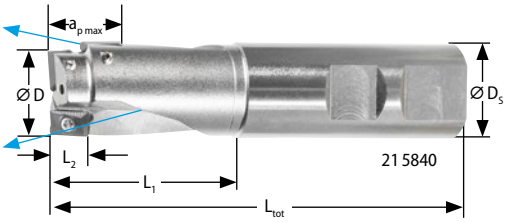
Indexable milling cutter 90° for AP.. 1003..

Note: Use GARANT torque screwdriver TQ No. **211750 size 1.2** with bit No. **674252 size 8IP**.



Ø D / number of teeth Z	210 21 5800	210 21 5801	L_1	L_{tot}	Ø D_s h6	suitable indexable insert	Pack of insert screws
	Indexable milling cutter 90°						
mm	Weldon shank	Plain shank	mm	mm	mm		
10/1	XXX	–	28	80	16	AP.. 1003..	219814 (8IP; 1.2 Nm)
12/1	XXX	–	28	80	16	AP.. 1003..	219814 (8IP; 1.2 Nm)
14/1	XXX	–	37	85	16	AP.. 1003..	219814 (8IP; 1.2 Nm)
16/2	XXX	–	37	85	16	AP.. 1003..	219814 (8IP; 1.2 Nm)
18/2	XXX	–	40	90	20	AP.. 1003..	219814 (8IP; 1.2 Nm)
20/2L	XXX	–	50	150	20	AP.. 1003..	219814 (8IP; 1.2 Nm)
20/2XL	–	XXX	28	200	18	AP.. 1003..	219814 (8IP; 1.2Nm)
20/2	XXX	–	40	90	20	AP.. 1003..	219814 (8IP; 1.2 Nm)
20/3	XXX	–	40	90	20	AP.. 1003..	219814 (8IP; 1.2 Nm)
25/2L	XXX	–	55	170	25	AP.. 1003..	219814 (8IP; 1.2 Nm)
25/2XL	–	XXX	28	220	20	AP.. 1003..	219814 (8IP; 1.2Nm)
25/3	XXX	–	49	105	25	AP.. 1003..	219814 (8IP; 1.2 Nm)
25/4	XXX	–	49	105	25	AP.. 1003..	219814 (8IP; 1.2 Nm)
32/3L	XXX	–	55	195	25	AP.. 1003..	219814 (8IP; 1.2 Nm)
32/5	XXX	–	54	110	25	AP.. 1003..	219814 (8IP; 1.2 Nm)



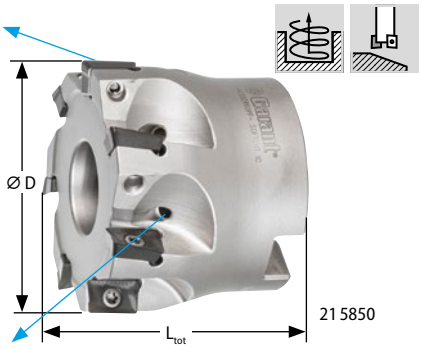


Application:

21 5840 – For drilling and for machining of slots.

Ø D / number of effective cutting edges Z	210 21 5840	Number of inserts	$a_{p\,max}$	L_1	L_2	L_{tot}	Ø D_s h6	Pack of insert screws
	Indexable milling cutter 90°							
mm	Weldon shank		mm	mm	mm	mm	mm	
20/2	XXX	3	17	35	9	90	20	219814 (8IP; 1.2 Nm)
25/2	XXX	3	19	50	9	110	25	219814 (8IP; 1.2 Nm)

Ø D / number of teeth Z	210 21 5850	L_{tot}	Mounting bore Ø	suitable indexable insert	Pack of insert screws
	Indexable milling cutter 90°				
mm	with bore	mm	mm		
40/4	XXX	40	16	AP.. 1003..	219814 (8IP; 1.2 Nm)
40/6	XXX	40	16	AP.. 1003..	219814 (8IP; 1.2 Nm)
50/6	XXX	40	22	AP.. 1003..	219814 (8IP; 1.2 Nm)
50/7	XXX	40	22	AP.. 1003..	219814 (8IP; 1.2 Nm)
63/8	XXX	40	22	AP.. 1003..	219814 (8IP; 1.2 Nm)
63/9	XXX	40	22	AP.. 1003..	219814 (8IP; 1.2 Nm)
80/10	XXX	50	27	AP.. 1003..	219814 (8IP; 1.2 Nm)
100/12	XXX	50	32	AP.. 1003..	219814 (8IP; 1.2 Nm)



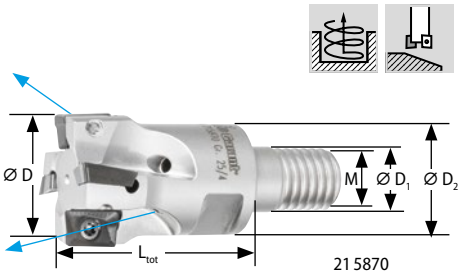
Application:

21 5860 – For peripheral milling and side milling.
21 5870 – General application in all materials and for slot milling.

Note:
21 5870 – Arbors for milling cutters with thread see catalogue section 3.

Ø D / Z_{eff} mm	210 21 5860 Indexable milling cutter 90° **Weldon shank**	number of effective inserts Z_{eff}	Number of inserts	$a_{p\,max}$ mm	L_1 mm	L_{tot} mm	Ø D_s h6 mm	Pack of insert screws
25/2	XXX	2	6	28	52	110	25	219814 (8IP; 1.2 Nm)
25/3	XXX	3	9	28	52	110	25	219814 (8IP; 1.2 Nm)
32/2	XXX	2	8	38	54	114	32	219814 (8IP; 1.2 Nm)
32/3	XXX	3	12	38	54	114	32	219814 (8IP; 1.2 Nm)

Ø D / number of teeth Z mm	210 21 5870 Indexable milling cutter 90° **with threaded shank**	L_{tot} mm	Ø D_1 h6 mm	Ø D_2 mm	Mounting thread M	Pack of insert screws
15,7/2	XXX	23	8.5	12.7	M8	219814 (8IP; 1.2 Nm)
16/2	XXX	23	8.5	12.7	M8	219814 (8IP; 1.2 Nm)
19,7/3	XXX	30	10.5	17.7	M10	219814 (8IP; 1.2 Nm)
20/3	XXX	30	10.5	17.7	M10	219814 (8IP; 1.2 Nm)
24,7/4	XXX	35	12.5	20.7	M12	219814 (8IP; 1.2 Nm)
25/3	XXX	35	12.5	20.7	M12	219814 (8IP; 1.2 Nm)
25/4	XXX	35	12.5	20.7	M12	219814 (8IP; 1.2 Nm)
32/5	XXX	43	17	28.7	M16	219814 (8IP; 1.2 Nm)

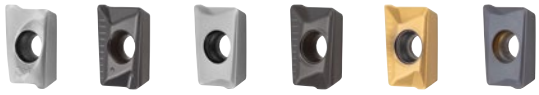


MTC milling inserts AP.. 1003.. for milling cutters No. 215795 – 215870

Inserts with highly positive geometry and helical cutting edges.

Note: Standard application values apply for milling cutters No. 215800, 215850, 215870: for $a_e = 0.3 \times D$ / $a_{p\,max} = 4.8$ mm.
21 5883 – **Successor product to No. 215881.**

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	CuZn	Graphite GRP CRP	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	M	M	S	K	N	N						
21 5879/5885				440	310	260	250	**230**				320	210		210				●	○	○	●	●
21 5880				**300**	**250**	**240**	160	125				**180**	160		**220**			●	●	○		●	
21 5882				**330**	**255**	**205**	**175**	**150**				**220**	155	50						●		●	
21 5883	1200	400	250	**320**	**180**	**160**	120	80				**190**	180	40	**170**	280	80	●		○		●	
21 5884			220	**290**	**160**	**140**	110	70				**160**	150		**150**			●				●	
21 5918–21 5928	700	600		180	160	150	130	110				**90**	**80**	**50**						●		●	
21 5935/5939	**700**	**600**	**400**													**500**	**400**			●			
21 5944	**1200**	**1200**	**450**											50						●		○	
21 5946/5947				**390**	**270**	**230**	220	200				**250**	160		180			●	●	●	●	●	●
21 5948						250	**260**	210												○		●	



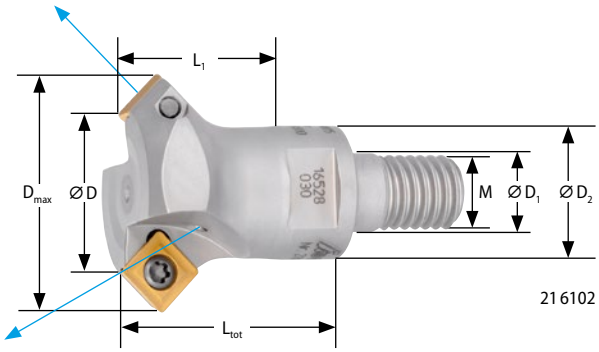
Type				ALU	ST900	ST1100	ST1400	INOX	UNI		Insert thickness mm	
21A 21 5935		APHT 100302 FR	HU7815	XXX	–	–	–	–	–	10	3.5	
21A 21 5939		APHT 100305 FR	HU7815	XXX	–	–	–	–	–	10	3.5	
21A 21 5944		APGT 1003 PDTR	HB7805	XXX	–	–	–	–	–	10	3.18	
21A 21 5946		APMT 100305 TR	HB7525	–	XXX	–	–	–	–	10	3.5	
21A 21 5947		APMT 100308 TR	HB7525	–	XXX	–	–	–	–	10	3.5	
21A 21 5948		APMT 100305 TR	HB8525	–	–	XXX	–	–	–	10	3.18	
21A 21 5879			HB7515	–	–	–	XXX	–	–	10	3.5	
21A 21 5885	Garant	APMT 100308 TR	HB7515	–	–	–	XXX	–	–	10	3.5	
21A 21 5918		APMT 100302 TR	HB7635	–	–	–	–	XXX	–	10	3.5	
21A 21 5920		APMT 100305 TR	HB7635	–	–	–	–	XXX	–	10	3.5	
21A 21 5922		APMT 100308 TR	HB7635	–	–	–	–	XXX	–	10	3.5	
21A 21 5924		APMT 100312 TR	HB7635	–	–	–	–	XXX	–	10	3.5	
21A 21 5928		APMT 100320 TR	HB7635	–	–	–	–	XXX	–	10	3.5	
21A 21 5880			HB7520	–	–	–	–	–	XXX	10	3.55	
21A 21 5883		APMT 100305 TR	HB720	–	–	–	–	–	XXX	10	3.18	
21A 21 5882			HB735	–	–	–	–	–	XXX	10	3.5	
22A 21 5884	HOLEX	APKT 100305 PDTR	HBM020	–	–	–	–	–	XXX	10	3.18	new
f_z			mm	0.12	0.12	0.11	0.1	0.12	–			

POWER CARD

Indexable chamfer mill 45° positive for SD.T 090308

Note: Use GARANT torque screwdriver TQ No. **211750 size 3.8** with bit No. **674252 size 15IP**.

Ø D mm	210 21 6100 Chamfer mill 45° Weldon shank	Number of cutting edges Z	Ø D_{max} mm	L_1 mm	L_{tot} mm	Ø D_s h6 mm	suitable indexable insert	Pack of insert screws
8	XXX	1	20.2	17	80	16	SD.. 090308	219804 (15IP; 3.8 Nm)
16	XXX	2	28.3	20.5	110	16	SD.. 090308	219805 (15IP; 3.8 Nm)
17,5	XXX	3	29.8	25	110	16	SD.. 090308	219805 (15IP; 3.8 Nm)
23,5	XXX	4	35.8	30	130	20	SD.. 090308	219805 (15IP; 3.8 Nm)
25	XXX	2	37.3	27	130	25	SD.. 090308	219805 (15IP; 3.8 Nm)
33,5	XXX	5	45.8	30	140	25	SD.. 090308	219805 (15IP; 3.8 Nm)

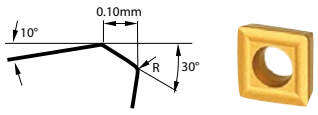


Ø D mm	210 21 6102 Chamfer mill 45° with thread	Number of cut-ting edges Z	Ø D_{max} mm	L_1 mm	Ø D_1 h6 mm	L_{tot} mm	Ø D_2 mm	Mounting thread M	suitable indexable insert	Pack of insert screws
8	XXX	1	20.2	14	6.5	23	9.75	M6	SD.. 090308	219804 (15IP; 3.8 Nm)
16	XXX	2	28.3	18	10.5	28	17.7	M10	SD.. 090308	219805 (15IP; 3.8 Nm)
17,5	XXX	3	29.8	18	10.5	30	17.7	M10	SD.. 090308	219805 (15IP; 3.8 Nm)
23,5	XXX	4	35.8	23	12.5	35	20.7	M12	SD.. 090308	219805 (15IP; 3.8 Nm)
25	XXX	2	37.3	23	12.5	35	20.7	M12	SD.. 090308	219805 (15IP; 3.8 Nm)
33,5	XXX	5	45.8	24	17	40	28.7	M16	SD.. 090308	219805 (15IP; 3.8 Nm)

Milling inserts SD.T 090308 for 45° chamfer mills No. 216100 / 216102

Strong milling inserts, **precision sintered with positive chip breakers. Face and seating surfaces precision ground.**

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	CuZn	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	M	M	S	K	N						
21 6408	250	250	120														250			●		○	
21 6410	250	250	120	260	220	170	100	80					120	90	100	150		●		○		●	



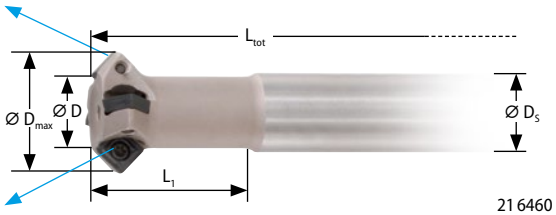
Type			ALU	UNI	
21A 21 6408	SDGT 090308 FN	HU7815	XXX	–	10
21A 21 6410	SDLT 090308 EN	HB7535	–	XXX	10
f_z		mm	0.15	–	

POWER CARD

High-performance chamfer mill 45° for SCLT 05T104

Application: For effective machining especially for small chamfering operations. For forwards and reverse chamfering at high speeds.
Reverse chamfering possible from size 6.

Note: Use GARANT torque screwdriver TQ No. **211750 size 0.6** with bit No. **674252 size 6IP**.

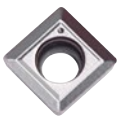


21 6460

Ø D	210 21 6460 High-performance chamfer mill 45° Plain shank	Number of cutting edges Z	Ø D_{max}	L_1	L_{tot}	Ø D_s h6	suitable indexable insert	Pack of insert screws
mm			mm	mm	mm	mm		
2	XXX	1	8.5	20	80	10	SC.. 05T104	219828 (6IP; 0.6 Nm)
6	XXX	1	12.5	20	80	10	SC.. 05T104	219828 (6IP; 0.6 Nm)
9	XXX	2	15.7	24	90	10	SC.. 05T104	219828 (6IP; 0.6 Nm)
12	XXX	4	18.5	24	100	12	SC.. 05T104	219828 (6IP; 0.6 Nm)
16	XXX	5	22.7	20	110	12	SC.. 05T104	219828 (6IP; 0.6 Nm)
20	XXX	6	26.7	20	120	16	SC.. 05T104	219828 (6IP; 0.6 Nm)

Milling insert SCLT 05T104 for high-performance 45° chamfer mill No. 216460

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	Graphite GRP CRP	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	N						
216465	1000	700	400																●	●	●	○	
216463	1000	900	550														●			●		○	
216470														160	120	60				○		●	
216475	410	410	280	240	205	200	150	120						110	95	60		●		○		●	



21 6463

Type			ALU	INOX	UNI	
21A 21 6465	SCLT 05T104	HU7810	XXX	–	–	10
21B 21 6463	SCLT 05T104 **diamond-coated**	HB7810	XXX	–	–	1
21A 21 6470	SCLT 05T104	HB7635	–	XXX	–	10
21A 21 6475	SCLT 05T104	HB7735	–	–	XXX	10
f_z		mm	0.08 – 0.18	0.06 – 0.15	–	

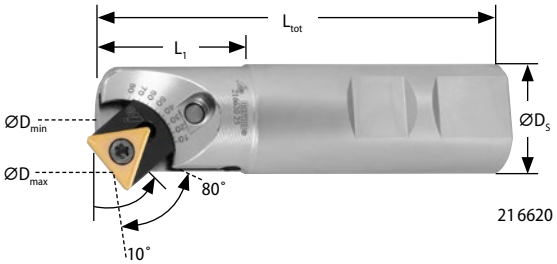
POWER CARD 10-80°

Adjustable indexable countersinking mill (10° – 80°) for TOH. 0902.. / 1604..

Quiet running due to **sturdy design.**

Application: For deburring edges, round holes, and long holes, and for countersinking. Rigid mounting is required (not suitable for power drills).
Steplessly adjustable for angles of 10° - 80°.

Note: Scale tolerance ±2.5°. **For setting to an exact angular value please use a pre-setting device.**
Size 20 – Use GARANT torque screwdriver TQ No. **211750 size 1.2** with bit No. **674252 size 8IP**.
Size 25 – Use GARANT torque screwdriver TQ No. **211750 size 3.0** with bit No. **674252 size 15IP**.



21 6620

Shank Ø D_s h6	210 21 6620 Adjustable indexable countersinking mill Weldon shank	Number of cutting edges Z	L_1	L_{tot}	Ø D_s h6	suitable indexable insert	Indexable index 216700 / 216740 / 216770	Insert screw	Cartridge	Clamp screw for cartridge
mm			mm	mm	mm					
20	XXX	1	30	95	20	TO.. 0902	14-660	219843 (8IP; 1,2 Nm)	219957	219945
25	XXX	1	30	95	25	TO.. 1604	32-050	219844 (15IP; 3.0 Nm)	219958	219946

Angle α		10	20	30	40	45	50	60	70	80
20	D_{min} (Ø)	5	8	10	13	14	15	17	19	20
	D_{max} (Ø)	26	27	27	27	27	27	26	25	24
25	D_{min} (Ø)	5	6	7	10	11	13	16	19	23
	D_{max} (Ø)	32	33	34	33	33	32	31	29	27

KOMET® Trigon milling inserts TOH. 0902.. / 1403.. / 1604..

With all-round chip breaker groove.
Size 14-6603 – With additional rake for free cutting. Clearance angle 15°.
Suitable for: Countersinking mill No. 216600 and 216620.

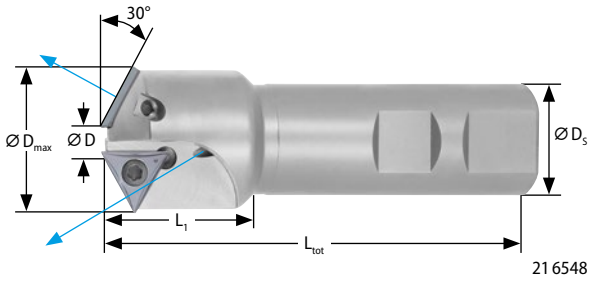
Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	Graphite GRP CRP					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	K	N					
21 6700	**250**	**250**		**250**	**200**	**200**								120						●			
21 6740																	**150**			●		●	
21 6770	250	250	120	**250**	**200**	**200**	**150**	**120**						**120**	100	100	150			●		○	

21 6700 21 6770 21 6770 21 6770

Designation			14-6603	14-660	26-660	32-050	
24T 21 6700	KOMET® indexable insert	P25M	XXX	XXX	XXX	XXX	10
24T 21 6740		K10	XXX	XXX	XXX	–	10
24T 21 6770		BK8425	XXX	XXX	XXX	XXX	10
ISO code indexable insert			TOHX 090204 EN	TOHX 090204 EN	TOHX 140305 EN	TOHT 160408 EN	

Garant Indexable chamfer mill 30° for TC.T 16T304

Note: Use GARANT torque screwdriver TQ No. **211750 size 3.0** with bit No. **674252 size 15IP**.

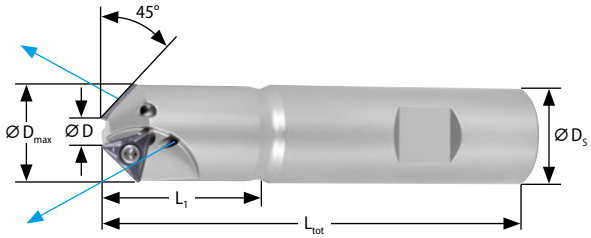


21 6548

Type	210 21 6548 Chamfer mill 30° Weldon shank	Number of cutting edges Z	Ø D mm	Ø D_{max} mm	L_1 mm	L_{tot} mm	Ø D_s h6 mm	suitable indexable insert	Insert screw
6	XXX	2	6	32	38	100	25	260986_HB725	219844 (15IP; 3.0 Nm)

Garant Indexable chamfer mill 45° for TC.T 110204 / 16T304

Note:
Size 1; 6 – Use GARANT torque screwdriver TQ No. **211750 size 1.2** with bit No. **674252 size 8IP**.
Size 10 – Use GARANT torque screwdriver TQ No. **211750 size 3.0** with bit No. **674252 size 15IP**.

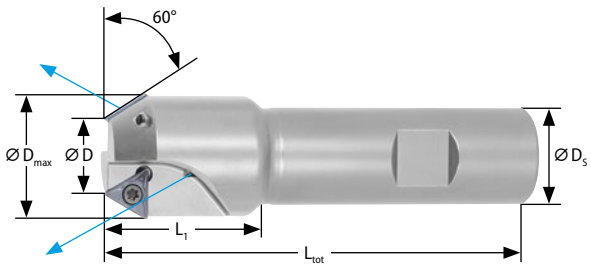


21 6550

Type	210 21 6550 45° chamfer mill Weldon shank	Number of cutting edges Z	Ø D mm	Ø D_{max} mm	L_1 mm	L_{tot} mm	Ø D_s h6 mm	suitable indexable insert	Insert screw
1	XXX	1	1.2	16	20	70	12	260982_HB725	219842 (8IP; 1.2 Nm)
6	XXX	2	6.2	21	35	90	20	260982_HB725	219842 (8IP; 1.2 Nm)
10	XXX	2	10.4	32.5	42	100	25	260986_HB725	219844 (15IP; 3.0 Nm)

Garant Indexable chamfer mill 60° for TC.T 110204 / 16T304

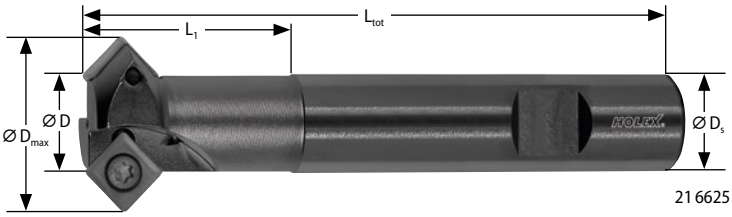
Note:
Size 5; 16 – Use GARANT torque screwdriver TQ No. **211750 size 1.2** with bit No. **674252 size 8IP**.
Size 20 – Use GARANT torque screwdriver TQ No. **211750 size 3.0** with bit No. **674252 size 15IP**.



21 6552

Type	210 21 6552 Chamfer mill 60° Weldon shank	Number of cutting edges Z	Ø D mm	Ø D_{max} mm	L_1 mm	L_{tot} mm	Ø D_s h6 mm	suitable indexable insert	Insert screw
5	XXX	1	5.4	16	20	70	12	260982_HB725	219842 (8IP; 1.2 Nm)
16	XXX	2	15.8	26	35	90	20	260982_HB725	219842 (8IP; 1.2 Nm)
20	XXX	2	20	35	39	100	25	260986_HB725	219844 (15IP; 3.0 Nm)

HOLEX Chamfer mill 45° for SP.T 060304 and SP.T 09T308



21 6625

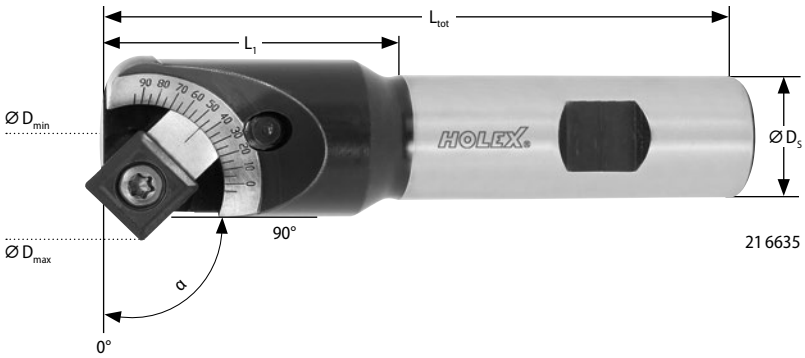
Type	220 21 6625 Chamfer mill 45° Weldon shank	Number of cutting edges Z	Ø D mm	Ø D_{max} mm	L_1 mm	L_{tot} mm	Ø D_s h6 mm	suitable indexable insert	Pack of insert screws
4	XXX	1	4	10	28	80	12	SP..060304	219840 (8IP; 1,2 Nm)
11	XXX	2	11	20	32	80	12	SP..060304	219840 (8IP; 1,2 Nm)
12	XXX	1	12	23.7	37	100	20	SP..09T308	219841 (15IP; 3.0 Nm)
16	XXX	2	16	28.8	32	100	16	SP..09T308	219841 (15IP; 3.0 Nm)
30	XXX	3	30	42.3	32	100	20	SP..09T308	219841 (15IP; 3.0 Nm)

HOLEX Adjustable indexable countersinking mill (0 – 90°) for SP.T 09T308 / 120408

Made of hardened tool steel. Deeply engraved scale.
Two exposed insert edges

Application: For forwards and reverse deburring, chamfering and countersinking. Suitable for oblique plunging.
Steplessly adjustable for angles of 0° - 90°.

Note: **For setting to an exact angular value, use a pre-setting device.**



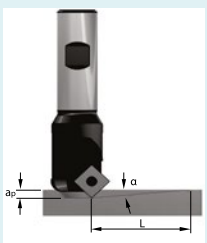
21 6635

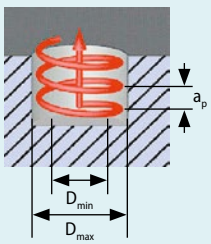
Shank Ø D_s h6 mm	220 21 6635 Adjustable indexable countersinking mill Weldon shank	L_1 mm	L_{tot} mm	suitable indexable insert	Pack of insert screws	Adjustment element	Clamping screw for adjustment element
16	XXX	37	86	SP.T09T3..	219841 (15IP; 3.0 Nm)	219885	219887
20	XXX	44	98	SP.T1204..	219848 (20IP; 5.5 Nm)	219886	219888
25	XXX	49	105	SP.T1204..	219848 (20IP; 5.5 Nm)	219886	219888

Angle α		0	10	20	30	40	45	50	60	70	80	90
16	D_{min} (Ø)	2.8	4.7	6.8	9.0	11.2	12.3	13.4	15.6	17.7	19.4	3.5
	D_{max} (Ø)	20.4	21.8	22.9	23.7	24.1	24.2	24.1	23.8	23.2	22.6	21.0
20	D_{min} (Ø)	3.1	5.7	8.4	11.6	14.3	16	17.3	20.3	23.1	25.4	3.9
	D_{max} (Ø)	26.9	28.8	30.3	31.4	31.9	32	31.9	31.6	30.7	29.4	27.6
25	D_{min} (Ø)	6.7	9.4	11.8	14.8	17.7	19.4	20.7	23.7	26.4	28.9	7.1
	D_{max} (Ø)	30.4	32.3	33.7	34.8	35.3	35.4	35.3	34.9	34.0	32.7	30.9

HOLEX Application notes circular plunging and oblique plunging for No. 21 6635

Mill Ø D mm	Adjustment angle of the indexable insert degrees	Circular plunging (interpolation) D_{min} mm	D_{max} mm	Plunge angle α degrees	$a_{p\,max}$	Oblique plunging (ramping) Plunge angle α degrees	Ramp distance L mm	$a_{p\,max}$
16	30	31	38.5	4	1.6	3	32.0	1.6
	45	34.5	39	3	1.6	3	36.0	1.6
	60	37	40	2	1.6	2	38.0	1.6
20	30	41.5	52	3	2.0	5	21.0	2.0
	45	46	53	3	2.0	4	26.0	2.0
	60	49.5	54	2	2.0	4	26.0	2.0
25	30	49	56.5	3	2.0	5	25.0	2.0
	45	53.5	58.5	2	2.0	4	27.0	2.0
	60	57	60.5	2	2.0	4	29.0	2.0





Engraving and deburring system

2-cutter system with t_{max} = 2.0 mm

∅ D_s h6		mm	6
21Y 21 7202	Steel shank for engraving		XXX
21Y 21 7204	Carbide shank for engraving		XXX
L_{tot} (21 7202)		mm	40
L_{tot} (21 7204)		mm	60
Insert screw			219877 (T7; 0.9 Nm)
suitable indexable insert			217210 - 217219

21 7202

21 7204

4-cutter system with t_{max} = 0.8 mm

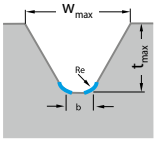
∅ D_s		mm	10
21Y 21 7225	Steel shank for engraving		XXX
L_{tot}		mm	90
Insert screw			231540_TX8 (2.0 Nm)
suitable indexable insert			217228

21 7225

Indexable inserts for engraving and deburring systems

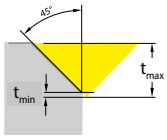
Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	K						
21 7211–21 7234				70	60	50	40							40	30		60	●		●	○		○
21 7210/7215	180	140	100																	●	○		○
21 7228				80	60	50	30	20									80			●	○		○

Inserts for engraving for 2-cutter system



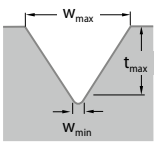
Type			ALU	UNI		Point angle degrees	R_e mm	b mm	t_{max} mm	w_{max} mm
21Y 21 7210	Insert for engraving	HU7805	XXX	–	10	45	0.08	0.4	2	2.06
21Y 21 7211		HB7525	–	XXX	10	45	0.08	0.4	2	2.06
21Y 21 7215		HU7805	XXX	–	10	60	0.08	0.4	2	2.71
21Y 21 7216		HB7525	–	XXX	10	60	0.08	0.4	2	2.71
f		mm	0.005- 0.03	0.003-0.03						

Inserts for deburring for 2-cutter system



Type			UNI		t_{min} mm	t_{max} mm	Z
21Y 21 7234	Inserts for deburring	HB7525	XXX	10	0.25	1.75	6
f		mm	0.005-0.03				

Inserts for engraving for 4-cutter system



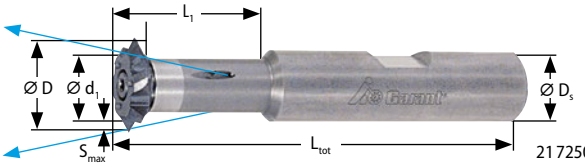
Type			UNI		Point angle degrees	w_{min} mm	w_{max} mm	t_{max} mm
21Y 21 7228	Insert for engraving	HB7525	XXX	2	90	0.25	1.8	0.8
f		mm	0.008 - 0.02					

POWER CARD

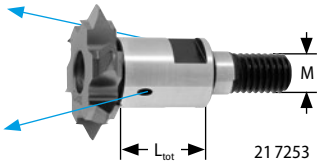
Garant Circular mill for polygon milling inserts

21 7253 Size 16/M5; 27/M8 – **Extra-slim version** for thread milling.

Note: Polygon milling inserts type P12 / P16 / P26 No. 217255 – 217327.



21 7250



21 7253

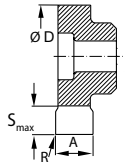
Type	21 7250	21 7252	21 7253	for insert type	Ø D	M	Ø d_1	S_{max}	L_1	L_{tot}	Ø D_s h6	Shank type	Set of insert screws
	Circular mills												
	Steel	Carbide	with thread steel		mm	mm	mm	mm	mm	mm	mm		
12	XXX	–	–	P12	12	–	7	2.25	22	69.5	12	Weldon	219832 (8IP; 1,0 Nm)
12L	–	XXX	–	P12	12	–	7	2.25	32	82	12	cylindrical	219832 (8IP; 1,0 Nm)
12/M5	–	–	XXX	P12	12	M5	9.5	1.1	–	13.5	–	with thread	219832 (8IP; 1,0 Nm)
16/M5	–	–	XXX	P16	18	M5	9.5	4.1	–	18.5	–	with thread	219818 (8IP; 1,2 Nm)
18	XXX	XXX	–	P16	18	–	9	4	25	71.5	12	Weldon	219818 (8IP; 1,2 Nm)
18L	–	XXX	–	P16	18	–	12	2.7	–	86.5	12	cylindrical	219818 (8IP; 1,2 Nm)
18XL	–	XXX	–	P16	18	–	12	2.7	–	126.6	12	cylindrical	219818 (8IP; 1,2 Nm)
18/M6	–	–	XXX	P16	18	M6	11	2.5	–	18.5	–	with thread	219818 (8IP; 1,2 Nm)
27	XXX	–	–	P26	27	–	13.6	6.8	35	84.2	16	Weldon	219819 (20 IP; 5.0 Nm)
27L	–	XXX	–	P26	27	–	15.5	5.7	25	109.6	16	cylindrical	219819 (20 IP; 5.0 Nm)
27XL	–	XXX	–	P26	27	–	15.5	5.7	25	180	20	cylindrical	219819 (20 IP; 5.0 Nm)
27/M8	–	–	XXX	P26	27	M8	13.6	5.7	–	22.6	–	with thread	219819 (20 IP; 5.0 Nm)
27/M10	–	–	XXX	P26	27	M10	18	3.5	–	22.6	–	with thread	219819 (20 IP; 5.0 Nm)

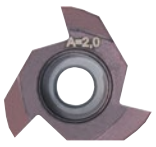
Garant Polygon milling inserts for circular mills No. 217250 / 217252 / 217253

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	Uni
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	K	
21 7255–21 7327	400	300	250	250	180	120	100	80	60	45	35	30		120	120	60	120	●

Milling inserts, unprofiled, ground ready for use — Type P12 / P16 / P26

21 7259 – With extra-large groove depth S_{max}.



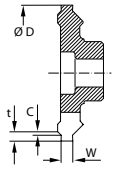


21 7255

21 7256

Milling width A		mm	1	1,5	2	2,5	3	4	5	6,5		S_{max} mm	Type	Z
21C 21 7255	Milling insert without profile	HB7720	–	XXX	XXX	XXX	XXX	–	–	–	3	2.25	P12	3
21C 21 7256		HB7720	–	XXX	XXX	XXX	XXX	XXX	XXX	–	3	3.5	P16	6
21C 21 7258		HB7720	–	XXX	XXX	XXX	XXX	XXX	XXX	XXX	3	6.2	P26	6
new 21C 21 7259		HB7720	XXX	XXX	XXX	XXX	XXX	–	–	–	3	11.5	P26	6
Radius R (21 7255, 21 7256, 21 7258)		mm	–	0.1	0.1	0.15	0.15	0.15	0.15	0.15				
Radius R (21 7259)		mm	0.15	0.15	0.15	0.15	0.15	–	–	–				
Ø D (21 7255)		mm	–	11.7	11.7	11.7	11.7	–	–	–				
Ø D (21 7256)		mm	–	17.7	17.7	17.7	16	16	16	–				
Ø D (21 7258)		mm	–	27.7	27.7	27.7	26	26	26	26				
Ø D (21 7259)		mm	37	37	37	37	37	–	–	–				

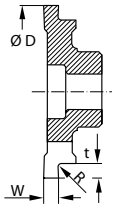
Milling inserts for retaining ring grooves, with chamfer — Type P16/P26

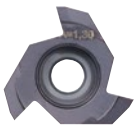


21 7261

Nominal ring thickness		mm	1,3	1,6	1,85	2,15		Ø D mm	Type	Z
21C 21 7261	Milling inserts for retaining ring grooves with chamfer	HB7720	XXX	XXX	–	–	3	16	P16	6
21C 21 7265		HB7720	–	–	XXX	XXX	3	26	P26	6
Slot width W –0.03		mm	1.38	1.68	1.93	2.23				
Depth t		mm	0.85	1	1.25	1.5				
Chamfer C		mm	0.15×45°	0.15×45°	0.2×45°	0.2×45°				

Milling inserts for retaining ring grooves, without chamfer — Type P12 / P16 / P26

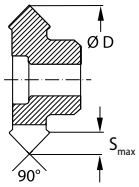



21 7269

21 7270

Nominal ring thickness		mm	0,9	1,1	1,3	1,6	2,15	2,65	3,15		Ø D mm	Type	Z
21C 21 7267	Milling inserts for retaining ring grooves without chamfer	HB7720	XXX	–	–	–	–	–	–	3	9.6	P12	3
21C 21 7269		HB7720	–	XXX	XXX	XXX	–	–	–	3	11.7	P12	3
21C 21 7270		HB7720	–	–	XXX	XXX	–	–	–	3	16	P16	6
21C 21 7275		HB7720	–	–	–	–	XXX	XXX	XXX	3	26	P26	6
Slot width W –0.03		mm	0.98	1.18	1.38	1.68	2.23	2.73	3.23				
Depth t for P12 (21 7267, 21 7269)		mm	1.2	0.9	1.1	1	–	–	–				
Depth t for P16/P26 (21 7270, 21 7275)		mm	–	–	1.1	1.25	1.75	1.75	2.2				
Radius R		mm	0.3										

90° milling inserts for chamfering and deburring — Type P12 / P16 / P26

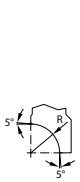


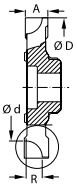
21 7277

21 7277

maximum milling depth S_{max}	21C 21 7277 Milling insert 90° for chamfering and deburring		Ø D	Minimum tapping drill Ø	Type	Z
mm	HB7720		mm	mm		
1,2	XXX	3	9.6	12	P12	3
1,5	XXX	3	11.7	12	P12	3
1,9	XXX	3	16	18	P16	6
2,1	XXX	3	26	28	P26	6

Radius milling inserts — Type P26

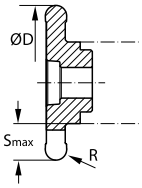




21 7278

Radius R		mm	0,5	1	1,5	2	2,5	3	4	5		Ø D mm	Type	Z
21C 21 7278	Radius milling insert	HB7720	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	3	26	P26	6
A		mm	3	3	4	4	4	4	6.5	6.5				
Ø d		mm	25	24	23	22	21	20	18	16				

Full radius milling inserts — Type P16/P26

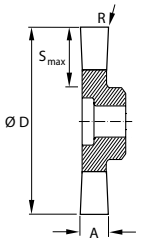


21 7297

Radius R		mm	1	1,5	2	2,5		Ø D mm	Type	Z
21C 21 7297	Full radius milling insert	HB7720	XXX	XXX	XXX	XXX	3	16	P16	6
Radius R		mm	1	1.5	2	2.5				
S_{max}		mm	2	3.5	3.5	3.5				

Radius R		mm	1,5	2	2,5	3		Ø D mm	Type	Z
21C 21 7298	Full radius milling insert	HB7720	XXX	XXX	XXX	XXX	3	26	P26	6
Radius R		mm	1.5	2	2.5	3				
S_{max}		mm	6.2							

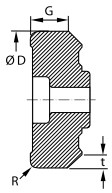
Milling inserts for parting off, with staggered toothing — Type P26



21 7271

Milling width A		mm	1	1,5	2	2,5	3		Ø D mm	Type	Z
21C 21 7271	Milling inserts for parting off, with staggered toothing	HB7720	XXX	XXX	XXX	XXX	XXX	3	37	P26	6
Radius R		mm	0.15								
S_{max}		mm	11.5								

Milling inserts for thread undercuts similar to DIN76-1 — Type P12 / P16 / P26



21 7272

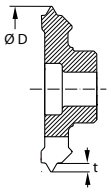
21 7273

Pitch		mm	1-1,5	1,75-2,5	3-3,5		Ø D mm	Type	Z
21C 21 7272	Milling insert for metric thread undercuts	HB7720	XXX	–	–	3	11.7	P12	3
21C 21 7273		HB7720	XXX	XXX	–	3	16	P16	6
21C 21 7274		HB7720	–	–	XXX	3	26	P26	6
G (21 7272, 21 7274)		mm	17	–	3.6				
G (21 7273)		mm	2,2	2.9	–				
Depth t (21 7272, 21 7274)		mm	1.1	–	2.3				
Depth t (21 7273)		mm	1.5	1.7	–				
Radius R		mm	0.7	1.1	1.6				

60° milling inserts for thread milling — Type P12 / P16 / P26

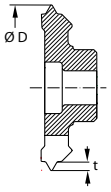
M | M-LH | MF | MF-LH | 60°

Note: **Corrected profile threading inserts** eliminate the need to program a correction to the diameter. Therefore use these inserts only for the specified thread sizes.
When using the circular mill No. 217252 size 18L, the partial profile insert No. 217281 size 1–4 can be used only up to pitch 3.0.



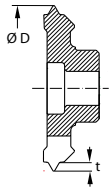
21 7279

Pitch		mm	1	1,5	2	1-3		Type	Z
21C 21 7279	Milling insert 60°	HB7720	XXX	XXX	XXX	XXX	3	P12	3
Insert geometry			Full profile, internal	Full profile, internal	Full profile, internal	Partial profile, internal / external			
Ø D		mm	9.6	9.6	10.5	11.7			
Depth t		mm	0.57	0.88	1.16	1.81			



21 7281

Pitch		mm	1,5	2	2,5	M20×2,5	3	1-4	2,5-4		Type	Z
21C 21 7281	Milling insert 60°	HB7720	XXX	XXX	XXX	XXX	XXX	XXX	XXX	3	P16	6
Insert geometry			Full profile, internal	Full profile, internal	Full profile, internal	Full profile, internal	Full profile, internal	Partial profile, internal / external	Partial profile, internal / external			
Ø D		mm	16									
Depth t		mm	0.864	1.159	1.444	1.444	1.702	0.578 – 2.308	2.6			
for threads ≥			M20	M22	M22	only M20×2.5 corrected profile	M24	M20	M20			



21 7285

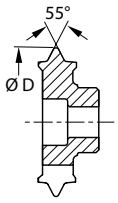
Pitch		mm	1,5	2	3	3,5	M30×3,5	4	M36×4	4,5	5	1-3	2,5-5		Type	Z
21C 21 7285	Milling insert 60°	HB7720	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	3	P26	6
Insert geometry			Full profile, internal	Full profile, internal	Full profile, internal	Full profile, internal	Full profile, internal	Full profile, internal	Full profile, internal	Full profile, internal	Full profile, internal	Partial profile, internal / external	Partial profile, internal / external			
Ø D		mm	26	26	26	26	24	26	26	26	26	26	26			
Depth t		mm	0.864	1.159	1.728	2.023	2.023	2,262	2.262	2.602	2.887	3.7	3.2			
for threads ≥			M30	M30	M32	M33	only M30×3.5 corrected profile	M36	only M36x4 corrected profile	M42	M48	M30	M30			

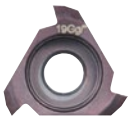
55° milling inserts for thread milling

Type P12 / P16 / P26

21 7295 – For thread >1 inch.

Note: BSW only for external threads.





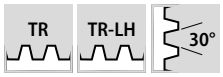
21 7288

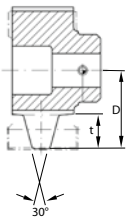
21 7290

Threads per inch			11	14	19		Type	Z
21C 21 7288	Milling insert 55°	HB7720	–	–	XXX	3	P12	3
21C 21 7290		HB7720	XXX	XXX	–	3	P16	6
21C 21 7295		HB7720	XXX	–	–	3	P26	6
Insert geometry			Full profile, internal / external					
Ø D (21 7288, 21 7290)		mm	16	16	9.6			
Ø D (21 7295)		mm	26	–	–			

30° milling inserts for thread milling

Type P12 / P16 / P26





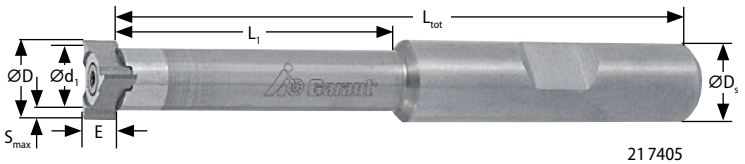
21 7302

Pitch		mm	2	3	5	6	7	8		Type	Z
21C 21 7302	Milling insert 30°	HB7720	XXX	–	–	–	–	–	3	P12	3
21C 21 7305		HB7720	–	XXX	–	–	–	–	3	P12	3
21C 21 7308		HB7720	–	XXX	–	–	–	–	3	P16	3
21C 21 7311		HB7720	–	–	XXX	–	–	–	3	P26	3
21C 21 7314		HB7720	–	–	–	XXX	–	–	3	P16	3
21C 21 7317		HB7720	–	–	–	XXX	–	–	3	P16	3
21C 21 7321		HB7720	–	–	–	–	XXX	–	3	P26	3
21C 21 7324		HB7720	–	–	–	–	–	XXX	3	P26	3
21C 21 7327		HB7720	–	–	–	–	–	XXX	3	P26	3
Insert geometry			Full profile, internal								
Ø D (21 7302, 21 7305, 21 7311, 21 7314, 21 7317, 21 7321, 21 7324, 21 7327)		mm	11.7	11	25	16.2	22	25			
Ø D (21 7308)		mm	–	14	–	–	–	–			
Depth t		mm	1.25	1.75	2.75	3.25	3.75	4.25			
for threads ≥ (21 7302, 21 7305, 21 7311, 21 7314, 21 7321, 21 7324)			Tr16×2 – Tr20×2	Tr18×3 – Tr20×3	Tr44×5 – Tr48×5	Tr30×6 – Tr32×6	Tr38×7 – Tr42×7	Tr46×8 – Tr48×8			
for threads ≥ (21 7308, 21 7317, 21 7327)			–	Tr24×3 – Tr32×3	–	Tr34×6 – Tr42×6	–	Tr50×8 – Tr52×8			

POWER CARD

Circular mills for triangular milling inserts

No. 217400 sizes 8 and 11 as well as No. 217405 size 11L without internal cooling.

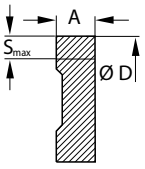


21 7405

Type	21Q 21 7400 Circular mill (without insert) Steel	21Q 21 7405 Circular mill (without insert) Carbide	for insert type	Ø D mm	Ø d_1 mm	S_{max} mm	L_1 mm	L_{tot} mm	Ø D_s h6 mm	Shank type	Set of insert screws
8	XXX	–	04	7.9	7.1	0.35	17.2	57.2	10	Weldon	219820 (6 IP; 0,6 Nm)
11	XXX	–	03	10.6	7.4	1.6	17.2	57.2	10	Weldon	219820 (6 IP; 0,6 Nm)
20	XXX	–	02	17.5	12.2	2.6	28.7	74.05	12	Weldon	219821 (15 IP; 3,0 Nm)
25	XXX	–	01	23	16	3.45	38.5	87	16	Weldon	219822 (20 IP; 5.0 Nm)
25L	XXX	–	01	23	16	3.45	67.5	116	16	Weldon	219822 (20 IP; 5.0 Nm)
11L	–	XXX	03	10.6	7.4	1.6	34.2	74.2	10	Weldon	219820 (6 IP; 0,6 Nm)
11XL	–	XXX	03	10.6	8	1.25	–	77.66	8	cylindrical	219820 (6 IP; 0,6 Nm)
20L	–	XXX	02	17.5	12.2	2.6	63.7	108.7	12	Weldon	219821 (15 IP; 3,0 Nm)
20XL	–	XXX	02	17.5	12.2	2.6	–	121.5	12	cylindrical	219821 (15 IP; 3,0 Nm)
25XL	–	XXX	01	23	16	3	–	148.58	16	cylindrical	219822 (20 IP; 5.0 Nm)

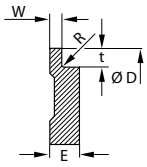
Triangular milling inserts for circular mills No. 217400 / 217405

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	K						
217420–217462	600	500	400	260	220	180	100	80	60	45	35	30		130	120	100	120	●		●		●	
217490–217510	600	500	400	260	220	180	100	80	60	45	35	30		130	120	100	120	●		●		○	



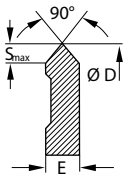
21 7420

Milling width A		mm	2,34	3	3,5	4		Ø D mm	Type	Z
21C 21 7420	Milling inserts without profile	HB7720	XXX	XXX	–	–	10	10.6	03	3
21C 21 7424		HB7720	–	–	XXX	–	5	17.5	02	3
21C 21 7428		HB7720	–	–	–	XXX	5	23	01	3
S_{max}		mm	1.6	1.6	2.6	3.45				



21 7450

Nominal ring thickness		mm	0,9	1,1	1,3	1,6	1,85	2,15	2,65	3,15		Ø D mm	E mm	Type	Z
21C 21 7450	Milling inserts for retaining ring grooves without chamfer	HB7720	XXX	–	–	–	–	–	–	–	10	7.9	2.34	04	3
21C 21 7454		HB7720	–	XXX	XXX	–	XXX	–	–	–	10	10.6	2.34	03	3
21C 21 7458		HB7720	–	XXX	XXX	XXX	–	–	XXX	XXX	5	17.5	3.5	02	3
21C 21 7462		HB7720	–	–	–	XXX	–	XXX	XXX	XXX	5	23	4	01	3
Slot width W –0.03		mm	0.98	1.18	1.38	1.68	1.93	2.23	2.73	3.23					
Depth t		mm	0.3	0.9	1.1	1.25	1.25	1.75	1.75	2.2					
Radius R		mm	0.3												

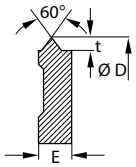


21 7490

maximum milling depth S_{max}	21C 21 7490 Milling insert 90°		Insert thickness E	Ø D	Type	Z
mm	HB7720		mm	mm		
0,9	XXX	10	2.34	7.9	04	3
1,5	XXX	10	3	10.6	03	3
2,5	XXX	5	5	17.5	02	3
3,25	XXX	5	6.5	23	01	3

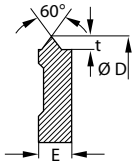
60° milling inserts for thread milling

M | M-LH | MF | MF-LH | 60°



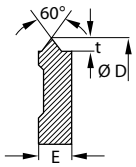
21 7500

Pitch	mm	1,5	2		Type	Z
21C 21 7500 Milling insert 60°	HB7720	XXX	XXX	10	03	3
Insert geometry		Full profile, internal				
Ø D	mm	10.6				
Depth t	mm	0.864	1.159			
Insert thickness E	mm	2.34				
for threads ≥		M16				



21 7505

Pitch	mm	1,5	2	M20×2,5	2,5	3	1-3,5		Type	Z
21C 21 7505 Milling insert 60°	HB7720	XXX	XXX	XXX	XXX	XXX	XXX	5	02	3
Insert geometry		Full profile, internal	Full profile, internal	Full profile, internal	Full profile, internal	Full profile, internal	Partial profile, internal / external			
Ø D	mm	17.5	17.5	16	17.5	17.5	17.5			
Depth t	mm	0.864	1.159	1.444	1.444	1.728	0.578 - 2.023			
Insert thickness E	mm	3.5								
for threads ≥		M24	M24	only M20×2.5 corrected profile	M24	M24	M22			



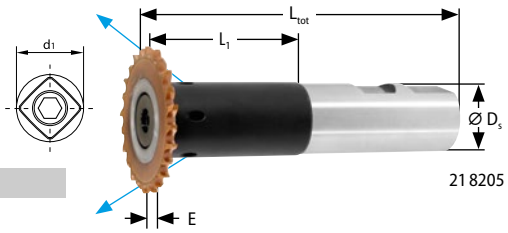
21 7510

Pitch	mm	2	3,5		Type	Z
21C 21 7510 Milling insert 60°	HB7720	XXX	XXX	5	01	3
Insert geometry		Full profile, internal				
Ø D	mm	23				
Depth t	mm	1.159	2.023			
Insert thickness E	mm	4				
for threads ≥		M30	M33			

mimatic Tool Systems

PolySAW-G / DeepMILL-G

Saw blades secured by a single screw in the centre.
Quadrogon interface for improved torque transmission and torsional stiffness.
Supplied with: Supplied with clamping washer and clamping screw.



21 8205

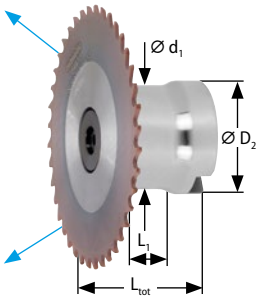
PolySAW-G / DeepMill-G basic holders with Weldon shank

Type	29B 21 8205 Toolholder **Weldon shank**	Ø d_1 mm	L_1 mm	L_{tot} mm	Ø D_s h6 mm	Clamping washer	Clamping screw
09/16	XXX	16.8	35	92	20	–	219834 (SW3; 3,8 Nm)
11/18	XXX	18.8	40	97	20	–	219835 (SW3; 10,5 Nm)
13/21	XXX	21.6	45	111	25	–	219836 (4AF; 24.5 Nm)
16/26	XXX	26	50	116	25	219845	219837 (SW3; 6,0 Nm)
19/30	XXX	30	55	128	32	219846	219838 (SW3; 10,5 Nm)
25/38	XXX	38.2	60	133	32	219847	219839 (SW4; 24,5 Nm)

PolySAW-G basic holders with bore

Application: With combination face mill adapter. **Only with PolySAW-G saw blades.**

Type	29B 21 8210 PolySAW toolholder **with bore**	Ø d_1 mm	Ø d_2 mm	L_1 mm	L_{tot} mm	Mounting bore Ø mm	Clamping washer	Clamping screw
16/26	XXX	26	32	20	42.5	16	219845	219837 (SW3; 6,0 Nm)
19/30	XXX	30	32	20	42.5	16	219846	219838 (SW3; 10,5 Nm)



21 8210

mimatic Tool Systems

PolySAW-G saw blades / DeepMILL-G milling discs

Note: Standard application values for a_e max.

a_e / D	25 %	20 %	15 %	10 %
f_z factor	0.85	0.9	1.00	1.15

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	Graphite GRP CRP					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	K	N					
21 8220/8224/ 8230–21 8236	300	200	150	**160**	**120**	**100**								**100**	**80**		**120**			●		●	
21 8222/8226	**600**	**500**	**400**																	●		○	

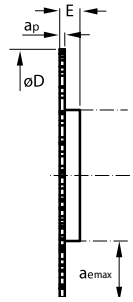
PolySAW-G saw blades

For parting off, sawing, and slitting.
PolySAW-G permits cutting to the full depth.

21 8220

21 8222

Ø D mm	29C 21 8220 Saw blades PolySAW-G **Width a_p = 1 mm** TiAlN	29C 21 8222 **Width a_p = 1 mm** TiAlN	29C 21 8224 **Width a_p = 1.5 mm** TiAlN	29C 21 8226 **Width a_p = 1.5 mm** TiAlN	Type of toolholder	Number of cutting edges Z 21 8220 21 8224	Number of cutting edges Z 21 8222 21 8226	Insert width E mm	$a_{e\,max}$ mm
32	XXX	XXX	XXX	XXX	09/16	18	16	6	7.6
40	XXX	XXX	XXX	XXX	11/18	24	20	6	10.5
50	XXX	XXX	XXX	XXX	13/21	32	20	6	14.2
63	XXX	XXX	XXX	XXX	16/26	40	24	6	18.5
80	XXX	XXX	XXX	XXX	19/30	40	24	6	25
f_z mm	0.015	0.02	0.02	0.025					

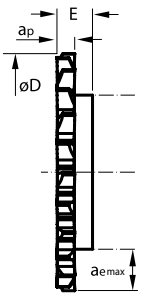


Deep-MILL-G milling discs

Slot milling, grooving, ribbed structures.
DeepMill-G permits cutting to the full depth.

21 8230

Ø D mm	29C 21 8230 Milling disc DeepMILL-G **Width a_p = 2 mm** TiAlN	29C 21 8232 **Width a_p = 3 mm** TiAlN	29C 21 8234 **Width a_p = 4 mm** TiAlN	29C 21 8236 **Width a_p = 5 mm** TiAlN	Type of toolholder	Number of effective inserts Z_{eff}	Number of cutting edges Z	Insert width E mm	$a_{e\,max}$ mm
32	XXX	XXX	XXX	XXX	11/18	8	16	6	6.6
40	XXX	XXX	XXX	XXX	13/21	9	18	6	9.2
50	XXX	XXX	XXX	XXX	16/26	12	24	6	12
63	XXX	XXX	XXX	XXX	19/30	12	24	6	16.5
80	XXX	XXX	XXX	XXX	25/38	12	24	6	20.9
f_z mm	0.025	0.025	0.03	0.03					



POWER CARD

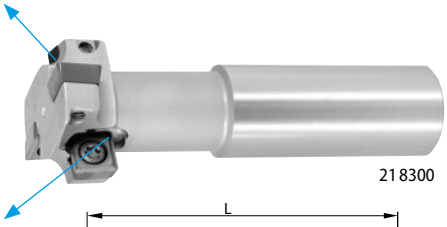
Garant T-slot cutter for SP.T 0603.. / 09T3.. / 1204..

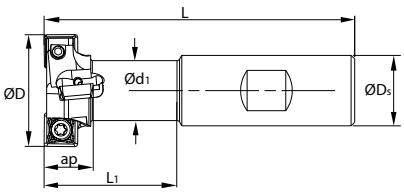
End mill with clamping face and internal coolant supply. Deeply recessed at the cutting area to allow working in very deep slots. Anti-corrosion surface treatment.

Application: For slots to DIN 650.

Note: Coolant feed via the internal coolant supply is preferable in order to achieve optimum chip clearance.

Size 50/2 – Use GARANT torque screwdriver TQ No. **211750 size 5.7** with bit No. **674252 size 20IP**.
Size 21/1; 25/2 – Use GARANT torque screwdriver TQ No. **211750 size 1.2** with bit No. **674252 size 8IP**.
Size 32/2; 40/2 – Use GARANT torque screwdriver TQ No. **211750 size 3.0** with bit No. **674252 size 15IP**.



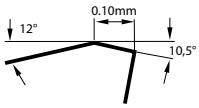


Ø D / Z_{eff}	210 21 8300 T-slot cutter Weldon shank	Number of effective inserts Z_{eff}	Number of inserts	Slot depth a_p	Ø d_1	L_1	L_{tot}	Ø D_s h6	suitable indexable insert	Pack of insert screws
mm				mm	mm	mm	mm	mm		
21/1	XXX	1	2	9	11	26	76	16	SP.T 060304	219840 (8IP; 1,2 Nm)
25/2	XXX	2	4	11	13	31	82	16	SP.T 060304	219840 (8IP; 1,2 Nm)
32/2	XXX	2	4	14	17	38	88	20	SP.T 09T308	219841 (15IP; 3.0 Nm)
40/2	XXX	2	4	17	21	50	108	25	SP.T 09T308	219841 (15IP; 3.0 Nm)
50/2	XXX	2	4	22	27	56	120	32	SP.T 120408	219848 (20IP; 5.5 Nm)

Garant Milling inserts SP.T 0603.. / 09T3.. / 1204..

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	K						
HU7815	750	700	600																	●		○	
HB720				220	200	180	140	120						180	160		170	●		●		○	

21 8305



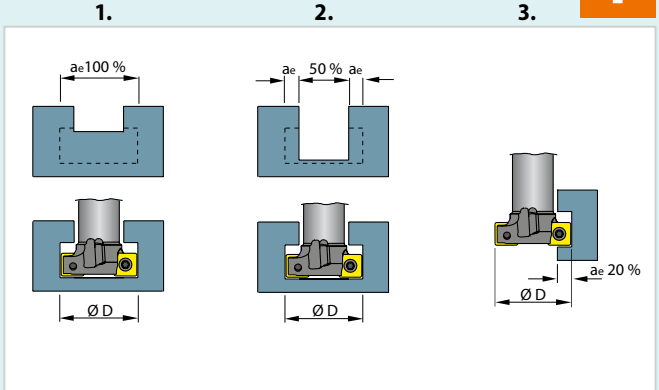
21 8320

Type			ALU	UNI	
21A 21 8305	SPGT 060304	HU7815	XXX	–	10
21A 21 8320	SPMT 060304	HB720	–	XXX	10
21A 21 8325	SPGT 09T308	HU7815	XXX	–	10
21A 21 8340	SPMT 09T308	HB720	–	XXX	10
21A 21 8345	SPGT 120408	HU7815	XXX	–	10
21A 21 8360	SPMT 120408	HB720	–	XXX	10
f_z (21 8305, 21 8320)		mm	0.12	0.09	
f_z (21 8325, 21 8340)		mm	0.14	0.11	
f_z (21 8345, 21 8360)		mm	0.15	0.12	

Application notes for T-slot cutter No. 21 8300

At a decreasing engagement width a_e / D the cutting speed v_c must be increased. The feed rate per cutter f_z must be corrected using the factor X.

a_e / D	100 %	50 %	20 %	10 %
v_c	70 %	80 %	90 %	100 %
X	1	1	1.3	1.5



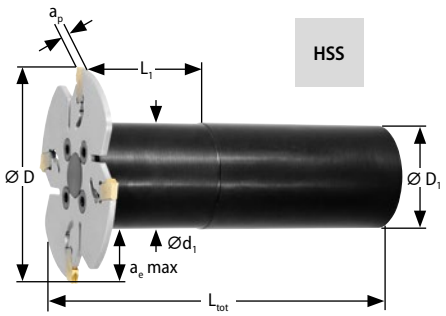
Garant Side / parting off milling cutter for clamped inserts

High-performance parting-off milling cutter system with choice of either collar and **low-cost steel blade** or collar and **high-precision temperature-resistant HSS blade.**

Application: For slitting and parting off milling. For high repetition accuracy in series production it is preferable to use the HSS blade.

Attention: Please order the assembly key No. 279940 1 separately. See catalogue page 734.

Note: Side and parting-off milling cutters available up to Ø D = 200 mm.



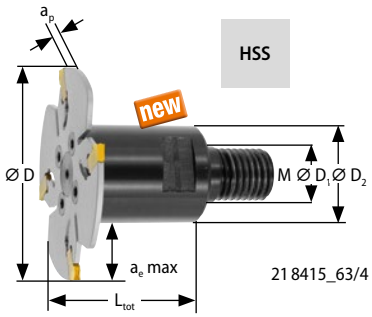
21 8412_63/4

Side / parting off milling cutter with plain shank

Ø D / number of teeth Z	21P 21 8408	21P 21 8410	21P 21 8412	21P 21 8414	$a_{e\,max}$	Ø d_1	L_1	L_{tot} a_p 1.5 mm	L_{tot} a_p 2.2 mm	Ø D_s h6
	Side / parting off milling cutter with plain shank									
	HSS width a_p = 1.5 mm	Steel width a_p = 1.5 mm	HSS width a_p = 2.2 mm	Steel width a_p = 2.2 mm						
mm					mm	mm	mm	mm	mm	mm
50/4	XXX	XXX	XXX	XXX	12.75	24.5	36	94.9	95.5	25
63/4	XXX	XXX	XXX	XXX	15.75	31.5	37	99.9	100.5	32

Side / parting off milling cutter with thread

Specially for use in deep cavities.

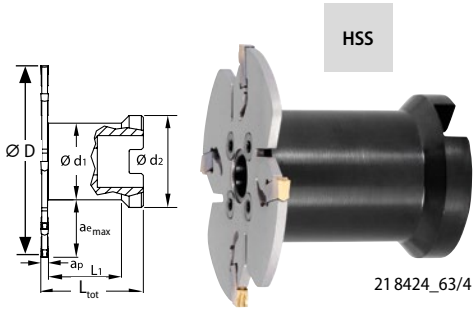


21 8415_63/4

Ø D / number of teeth Z	21P 21 8415	21P 21 8416	21P 21 8417	21P 21 8418	$a_{e\,max}$	Ø D_1 h6	L_{tot} a_p 1.5 mm	L_{tot} a_p 2.2 mm	Ø D_2	Mounting thread M
	Side / parting off milling cutter with thread									
	HSS width a_p = 1.5 mm	Steel width a_p = 1.5 mm	HSS width a_p = 2.2 mm	Steel width a_p = 2.2 mm						
mm					mm	mm	mm	mm	mm	
50/4	XXX	XXX	XXX	XXX	12.75	12.5	31.4	32	25	M12
63/4	XXX	XXX	XXX	XXX	15.75	17	33.4	40	23	M16

Side / parting off milling cutter with collar

Note: HSS spare blades can be ordered extra.



21 8424_63/4

Ø D / number of teeth Z	21P 21 8420	21P 21 8422	21P 21 8424	21P 21 8426	21P 21 8428	21P 21 8430	$a_{e\,max}$	Ø d_1	Ø d_2	L_1	L_{tot} a_p 1.5 mm	L_{tot} a_p 2.2 mm	L_{tot} a_p 3.1 mm	Mounting bore Ø
	Side / parting off milling cutter with collar													
	HSS width a_p = 1.5 mm	Steel width a_p = 1.5 mm	HSS width a_p = 2.2 mm	Steel width a_p = 2.2 mm	HSS width a_p = 3.1 mm	Steel width a_p = 3.1 mm								
mm							mm	mm	mm	mm	mm	mm	mm	mm
63/4	XXX	XXX	XXX	XXX	XXX	XXX	15.5	32	40	38	51.4	52	52.8	22
80/5	XXX	XXX	XXX	XXX	XXX	XXX	20	40	40	–	51.4	52	52.8	22
100/8	XXX	XXX	XXX	XXX	XXX	XXX	26	48	48	–	51.4	52	52.8	27
125/10	XXX	XXX	XXX	XXX	XXX	XXX	33.5	58	58	–	64.4	65	65.8	32
160/15	–	–	XXX	XXX	XXX	XXX	40	80	80	–	–	65	65.8	40

HSS blade accessories for side / parting off milling cutters No. 218420 – 218430

HSS

21 8440_125/10

∅ D / number of teeth Z	21P 21 8440	21P 21 8442	21P 21 8444	Set of securing screws
	Blade			
mm	HSS width a_p = 1.5 mm	HSS width a_p = 2.2 mm	HSS width a_p = 3.1 mm	
63/4	XXX	XXX	XXX	219985
80/5	XXX	XXX	XXX	219985
100/8	XXX	XXX	XXX	219985
125/10	XXX	XXX	XXX	219985
160/15	–	XXX	XXX	219985

Carbide inserts for side / parting off milling cutters No. 218408 – 218444

Note: Standard application values for a_e max.

a_e / D	25 %	20 %	15 %	10 %
f_z factor	1.0	1.15	1.25	1.5

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	K						
ALU	530	495	415																●				
ST900				210	150	150	115												●			○	
UNI				210	150	150	115							115	95		145	●	●			○	
INOX														115	95				●			○	

Type		ALU	ST900	INOX	UNI	
21B 21 8450	Insert **Width 1.5 mm**	XXX	XXX	–	XXX	10
21B 21 8460	Insert **Width 2.2 mm**	XXX	XXX	XXX	XXX	10
21B 21 8470	Insert **Width 3.1 mm**	XXX	XXX	XXX	XXX	10
Type		ALU	ST900	INOX	UNI	
Grade		HU7810	HB7535	HB7635	HB7535	
f_z	mm	0.13	0.1	0.07	–	
Tolerance a_p	mm	0 / + 0.3				

Installation wrench No. 27 9940 size 1

For side / parting off milling cutters

27 9940_1

POWER CARD Garant

Garant Side milling cutters for screw-on indexable inserts

Side milling cutters of robust special steel for reduced vibration.

Application: For milling grooves and slots.
Achievable base of the slot = 176° (not flat).

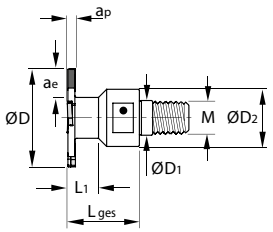
Note: Side milling cutters available up to Ø D = 200 mm.

21 8542_63

Side milling cutter with thread

Note:

21 8544 – Use GARANT torque screwdriver TQ No. **211750 size 2.2** with bit No. **674248 size TX15**.
21 8540/8542 – Use GARANT torque screwdriver TQ No. **211750 size 2.2**, with bit No. **674248 size TX9**.

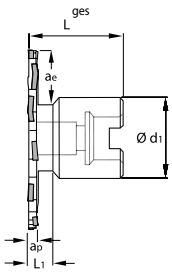


Ø D	210 21 8540	210 21 8542	210 21 8544	Number of effective inserts Z_{eff}		Number of inserts		$a_{e\,max}$	Ø D_1 h6	L_1	L_{tot}	Ø D_2	Mounting thread M
	Side milling cutter with thread												
				21 8540 21 8542	21 8544	21 8540 21 8542	21 8544						
mm	Width a_p = 4 mm	Width a_p = 5 mm	Width a_p = 6 mm					mm	mm	mm	mm	mm	
50	XXX	XXX	XXX	2	2	4	4	14	17	15	35	29	M16
63	XXX	XXX	XXX	4	3	8	6	14	17	–	35	29	M16
80	XXX	XXX	XXX	5	4	10	8	22.5	17	–	35	29	M16
ISO code indexable insert	SN..1102	SN..1103	SN..1203										
Pack of insert screws	219948 (TX9; 2.0 Nm)	219949 (TX9; 2.0 Nm)	219950 (TX15; 2.2 Nm)										

Side milling cutter with collar

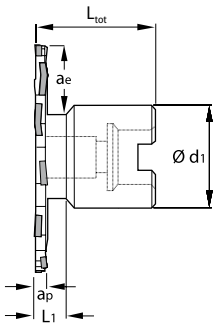
Note:

21 8560/8562 – Use GARANT torque screwdriver TQ No. **211750 size 2.2**, with bit No. **674248 size TX9**.
21 8564–8569 – Use GARANT torque screwdriver TQ No. **211750 size 2.2** with bit No. **674248 size TX15**.



21 8560_63

Ø D	210 21 8560	210 21 8562	210 21 8564	210 21 8565	Number of effective inserts Z_{eff}		Number of inserts		$a_{e\,max}$	Ø d_1	L_1	L_{tot}	Mounting bore Ø
	Side milling cutter with collar												
					21 8560 21 8562	21 8564 21 8565	21 8560 21 8562	21 8564 21 8565					
mm	Width a_p = 4 mm	Width a_p = 5 mm	Width a_p = 6 mm	Width a_p = 8 mm					mm	mm	mm	mm	mm
50	XXX	XXX	XXX	XXX	2	2	4	4	8.5	32	15	50	16
63	XXX	XXX	XXX	XXX	4	3	8	6	10.5	40	15	50	22
80	XXX	XXX	XXX	XXX	5	4	10	8	20	40	15	50	22
100	XXX	XXX	XXX	XXX	6	5	12	10	24.2	48	–	50	27
125	XXX	XXX	XXX	XXX	6	6	12	12	23.7	70	–	50	40
125L	XXX	XXX	XXX	XXX	6	6	12	12	29.7	59	–	50	32
160	XXX	XXX	XXX	XXX	8	8	16	16	41.2	70	–	50	40
ISO code indexable insert	SN.. 1102	SN.. 1103	SN.. 1203	SN.. 12045									
Pack of insert screws	219948 (TX9; 2.0 Nm)	219949 (TX9; 2.0 Nm)	219950 (TX15; 2.2 Nm)	219978 (TX15; 2.2 Nm)									



21 8569_80

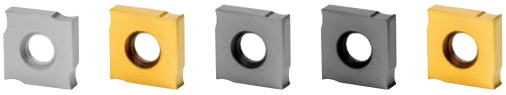
Ø D	210 21 8566	210 21 8567	210 21 8568	210 21 8569	Number of effective inserts Z_{eff}		Number of inserts		$a_{e\,max}$	Ø d_1	L_1	L_{tot}	Mounting bore Ø
	Side milling cutter with collar				21 8566 21 8567	21 8568 21 8569	21 8566 21 8567	21 8568 21 8569					
mm	Width a_p = 10 mm	Width a_p = 12 mm	Width a_p = 14 mm	Width a_p = 16 mm					mm	mm	mm	mm	mm
50	XXX	XXX	–	–	2	–	4	–	8.5	32	15	50	16
63	XXX	XXX	–	–	3	–	6	–	10.5	40	15	50	22
80	XXX	XXX	XXX	XXX	4	2	8	6	20	40	15	50	22
100	XXX	XXX	–	–	5	–	10	–	24.2	48	–	50	27
125	XXX	XXX	XXX	XXX	6	4	12	12	23.7	70	–	50	40
125L	XXX	XXX	–	–	6	–	12	–	29.7	59	–	50	32
160	XXX	XXX	XXX	XXX	8	5	16	15	41.2	70	–	50	40
ISO code indexable insert	SN.. 1205	SN.. 1207	SN.. 1205	SN.. 1207									
Pack of insert screws	219983 (TX15; 2.2 Nm)	219984 (TX15; 2.2 Nm)	219983 (TX15; 2.2 Nm)	219984 (TX15; 2.2 Nm)									

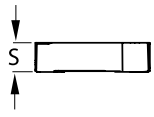
Garant Carbide indexable inserts for side milling cutters No. 218540 – 218569

Note: Standard application values for a_e max.

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	Graphite GRP CRP	Uni
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	N	
ALU	800	650	500															
INOX														120	100			
ST1400						200	180	170										
ST900				200	180	170												
UNI					180	170	160							110	90			●

a_e / D	25 %	20 %	15 %	10 %
f_z factor	1,0	1,15	1,25	1,5





Type		ALU	ST900	ST1400	INOX	UNI		Insert thickness S mm	for slot width a_p mm
21A 21 8571	SNHX 1102	XXX	XXX	XXX	XXX	XXX	10	2.3	4
21A 21 8581	SNHX 1103	XXX	XXX	XXX	XXX	XXX	10	2.7	5
21A 21 8591	SNHX 1203	XXX	XXX	XXX	XXX	XXX	10	3.2	6
21A 21 8601	SNHX 12045	XXX	XXX	XXX	XXX	XXX	10	4.5	8
21A 21 8611	SNHX 1205	XXX	XXX	XXX	XXX	XXX	10	5.4	10; 14
21A 21 8621	SNHX 1207	XXX	XXX	XXX	XXX	XXX	10	7	12; 16
Grade		HU7710	HB7525	HB7525	HB735	HB7525			
f_z	mm	0.1	0.08	0.13	0.13	–			
Chamfer width (21 8571, 21 8581)	mm	0.1	0.15	0.15	0.15	0.15			
Chamfer width (21 8591, 21 8601)	mm			0.25					
Chamfer width (21 8611)	mm	0.3	0.25	0.25	0.25	0.25			
Chamfer width (21 8621)	mm	0.45	0.25	0.25	0.25	0.25			

ISO carbide milling inserts / systems becoming obsolete

Milling inserts for indexable milling cutter No. 211870 - 211872

Type			ST1400	HART	UNI	
21A 21 1892	XDHW 060210	HB7720	XXX	–	–	10
21A 21 1894		HB7705	–	XXX	–	10
21A 21 1898		HB7535	–	–	XXX	10

21 1894

Type			ST1400	HART	UNI	
21A 21 1902	XDHW 10T310	HB7720	XXX	–	–	10
21A 21 1904		HB7705	–	XXX	–	10
21A 21 1908		HB7535	–	–	XXX	10

21 1908

Milling inserts for indexable milling cutter No. 213100

21 3450

21 3510

21 3520

Type			ST1400	INOX	UNI	
21A 21 3450	SPUN 120308 E	HU7730	XXX	–	–	10
21A 21 3510	SPUN 120308 S	HB7535	–	XXX	–	10
21A 21 3520	SPUN 120308 E	HB7720	–	–	XXX	10
21A 21 3530	SPKN 1203 EDER	HU7730	XXX	–	–	10
21A 21 3540	SPKN 1203 EDSR	HB7535	–	XXX	–	10
21A 21 3560	SPKN 1203 EDER	HB7720	–	–	XXX	10
21A 21 3600	SPLR 120308 S	HB7535	–	–	XXX	10

Milling inserts for indexable milling cutter No. 214800

Type			ALU	ST500	
21A 21 4940	MPHX 1104 PPFR	HU7710	XXX	–	10
21A 21 4960	MPHX 1104 PPER	HB7535	–	XXX	10

21 4940

21 4960

Milling inserts for indexable milling cutter No. 215105

Type		ALU	ST900	ST1400	INOX	GG	UNI	
21A 21 5111	AN.U 120604	–	XXX	XXX	XXX	XXX	XXX	10
21A 21 5113	AN.U 120608	XXX	XXX	–	–	XXX	XXX	10
Grade		HU9815	HB9535	HB9520	HB9635	HB9720	HB925	

Milling inserts for indexable milling cutter No. 216000 - 6008

Type			ALU	ST1400	
21A 21 6012	ANGT 160605 PPFR	HU7710	XXX	–	10
21A 21 6015	ANGT 160605 PPTR	HB7830	–	XXX	10

21 6012

21 6015

Milling inserts for indexable milling cutter No. 216025 - 6032

Type			ALU	ST1400	
21A 21 6035	ANGT 100305 PDFR	HU7710	XXX	–	10
21A 21 6037	ANGT 100305 PDER	HB7830	–	XXX	10

21 6035

21 6037

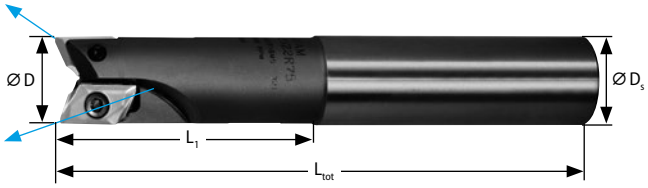
Milling inserts for precision boring bar No. 217200

Type			UNI	
29W 21 7231	MPHX 060202 TN	HB7720	XXX	10

21 7231

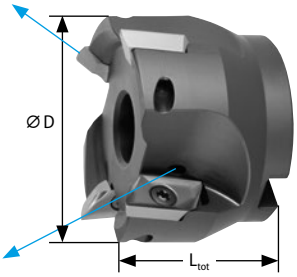
KENNAMETAL Milling cutter 90° 5720VZ16 for indexable inserts ZDET 16M5

Milling body with plain shank, balanced to G = 6.3 at 30,000 rpm. Shell-type milling cutters and milling cutters with modular interfaces have to be balanced together with their holder before use in high-speed copy milling. The design allows all radii of indexable inserts up to r_e = 6.0 mm to be mounted without modification to the milling head and without length correction.

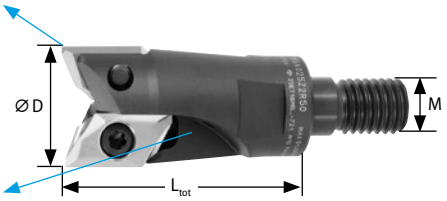


Ø D / number of teeth Z	28R	22 0800 Indexable milling cutter 90° 5720VZ16 Plain shank	$a_{p\,max}$	L_1	L_{tot}	Ø D_s h6	Insert screw
mm			mm	mm	mm	mm	
25/2		XXX	16	75	131	25	229900 (TP20; 6.0 Nm)
32/2		XXX	16	75	135	32	229900 (TP20; 6.0 Nm)
32/3		XXX	16	75	135	32	229900 (TP20; 6.0 Nm)

Ø D / number of teeth Z	28R	22 0803 Indexable milling cutter 90° 5720VZ16 with bore	$a_{p\,max}$	L_{tot}	Mounting bore Ø	Insert screw
mm			mm	mm	mm	
40/3		XXX	16	45	16	229900 (TP20; 6.0 Nm)
42/3		XXX	16	45	16	229900 (TP20; 6.0 Nm)
50/3		XXX	16	45	22	229900 (TP20; 6.0 Nm)
50/4		XXX	16	45	22	229900 (TP20; 6.0 Nm)
52/4		XXX	16	45	22	229900 (TP20; 6.0 Nm)
63/4		XXX	16	45	22	229900 (TP20; 6.0 Nm)
63/5		XXX	16	45	22	229900 (TP20; 6.0 Nm)
80/4		XXX	16	50	27	229900 (TP20; 6.0 Nm)
80/5		XXX	16	50	27	229900 (TP20; 6.0 Nm)



Ø D / number of teeth Z	28R	22 0806 Indexable millling cutter 90° 5720VZ16 with threaded shank	$a_{p\,max}$	L_{tot}	Mounting thread M	Insert screw
mm			mm	mm		
25/2		XXX	16	50	M12	229900 (TP20; 6.0 Nm)
32/2		XXX	16	50	M16	229900 (TP20; 6.0 Nm)
32/3		XXX	16	50	M16	229900 (TP20; 6.0 Nm)



KENNAMETAL Indexable inserts ZDET 16.. for indexable milling cutter No. 220800 – 220806

Recommendation: When exchanging the indexable inserts, please also replace the screws. Spare screws are supplied with the indexable inserts.

Note: f_z for a_e = 0.3×D.

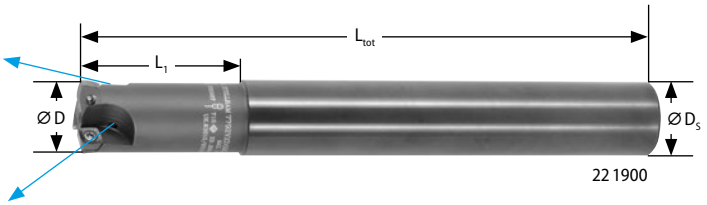
Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	Graphite GRP CRP	Uni
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	N	
22 0810–22 0832	**1640**	**1370**	**1095**															

Type			ALU	
28E **22 0810**	ZDET 16M503 PDFR-721	**GH1**	XXX	5
28E **22 0812**	ZDET 16M504 FR-721	**GH1**	XXX	5
28E **22 0814**	ZDET 16M508 FR-721	**GH1**	XXX	5
28E **22 0816**	ZDET 16M512 FR-721	**GH1**	XXX	5
28E **22 0818**	ZDET 16M516 FR-721	**GH1**	XXX	5
28E **22 0820**	ZDET 16M520 FR-721	**GH1**	XXX	5
28E **22 0822**	ZDET 16M525 FR-721	**GH1**	XXX	5
28E **22 0824**	ZDET 16M530 FR-721	**GH1**	XXX	5
28E **22 0826**	ZDET 16M532 FR-721	**GH1**	XXX	5
28E **22 0828**	ZDET 16M540 FR-721	**GH1**	XXX	5
28E **22 0830**	ZDET 16M550 FR-721	**GH1**	XXX	5
28E **22 0832**	ZDET 16M560 FR-721	**GH1**	XXX	5
f_z for roughing up to $a_{p\,max}$ 16 mm		mm	0.12 – 0.25	
f_z for pre-finishing a_p = 3 mm		mm	0.05 – 0.15	
f_z for finishing a_p = 1 mm		mm	0.02 – 0.1	

HPC

KENNAMETAL High feed rate milling cutter 7792VX for extreme metal removal rates

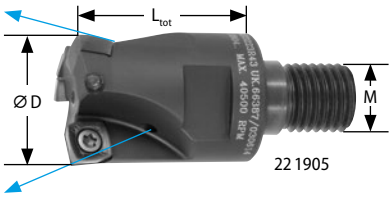
Description: The unique design of the indexable inserts together with their approach angle in the milling body greatly reduces the radial forces and diverts them into the axial direction. Particularly thick indexable inserts with 4 cutting edges for the heaviest duties and high cost-effectiveness. The tool has particular advantages for face milling and milling deep pockets. With its ground wiper chamfer it is equally well suited also to plunge milling and finish milling operations.



22 1900

22 1903

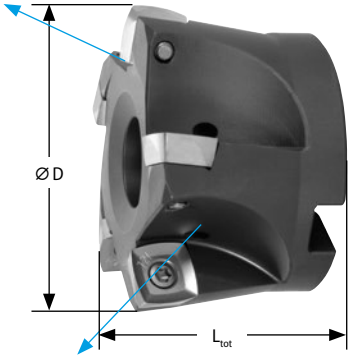
Ø D / number of teeth Z	28R 22 1900	28R 22 1903	Number of cutting edges Z	$a_{p\,max}$	L_1		L_{tot}		Ø D_s h6	Indexable insert size	Insert screw
	High feed rate milling cutter 7792VX				22 1900	22 1903	22 1900	22 1903			
mm	Plain shank	Weldon shank		mm	mm	mm	mm	mm	mm		
16/2	XXX	–	2	0.9	25	–	188	–	16	06	229915 (T7; 0,8 Nm)
20/3	XXX	–	3	0.9	32	–	204	–	20	06	229915 (T7; 0,8 Nm)
25/4	XXX	–	4	0.9	40	–	210	–	25	06	229916 (T7; 0.8 Nm)
32/5	XXX	–	5	0.9	40	–	250	–	32	06	229916 (T7; 0.8 Nm)
25/2	XXX	XXX	2	1.5	50	40	200	96	25	09	229917 (T15; 2.1 Nm)
25/3	XXX	–	3	1.5	50	–	200	–	25	09	229917 (T15; 2.1 Nm)
32/3	XXX	XXX	3	1.5	70	40	250	100	32	09	229918 (T15; 2.1 Nm)
32/4	XXX	–	4	1.5	70	–	250	–	32	09	229918 (T15; 2.1 Nm)
32/2	XXX	–	2	2.5	70	–	250	–	32	12	229908 (T15; 3.1 Nm)
32/3L	XXX	–	3	2.5	70	–	250	–	32	12	229908 (T15; 3.1 Nm)
40/2	XXX	–	2	3.5	102	–	172	–	40	16	229920 (TP20; 7,6 Nm)



22 1905

Ø D / number of teeth Z	28R 22 1905	Number of cutting edges Z	$a_{p\,max}$	L_{tot}	Mounting thread M	Indexable insert size	Insert screw
	High feed rate milling cutter 7792VX with threaded shank						
mm			mm	mm			
16/2	XXX	2	0.9	25	M8	06	229915 (T7; 0,8 Nm)
20/2	XXX	2	0.9	35	M10	06	229915 (T7; 0,8 Nm)
20/3	XXX	3	0.9	35	M10	06	229915 (T7; 0,8 Nm)
25/3	XXX	3	0.9	35	M12	06	229916 (T7; 0.8 Nm)
25/4	XXX	4	0.9	35	M12	06	229916 (T7; 0.8 Nm)
32/5	XXX	5	0.9	43	M16	06	229916 (T7; 0.8 Nm)
35/6	XXX	6	0.9	43	M16	06	229916 (T7; 0.8 Nm)
25/2	XXX	2	1.5	35	M12	09	229917 (T15; 2.1 Nm)
25/3L	XXX	3	1.5	35	M12	09	229917 (T15; 2.1 Nm)
32/3	XXX	3	1.5	43	M16	09	229918 (T15; 2.1 Nm)
32/4	XXX	4	1.5	43	M16	09	229918 (T15; 2.1 Nm)
35/3	XXX	3	1.5	43	M16	09	229918 (T15; 2.1 Nm)
35/4	XXX	4	1.5	43	M16	09	229918 (T15; 2.1 Nm)
42/5	XXX	5	1.5	43	M16	09	229918 (T15; 2.1 Nm)
32/2	XXX	2	2.5	43	M16	12	229908 (T15; 3.1 Nm)
32/3L	XXX	3	2.5	43	M16	12	229908 (T15; 3.1 Nm)
35/3L	XXX	3	2.5	43	M16	12	229908 (T15; 3.1 Nm)
42/4	XXX	4	2.5	43	M16	12	229908 (T15; 3.1 Nm)

∅ D / number of teeth Z mm	28R 22 1908 High feed rate milling cutter 7792VX with bore	$a_{p\,max}$ mm	L_{tot} mm	Mounting bore ∅ mm	Indexable insert size	Insert screw
40/3	XXX	1.5	32	16	09	229918 (T15; 2.1Nm)
40/4	XXX	1.5	32	16	09	229918 (T15; 2.1Nm)
40/5	XXX	1.5	32	16	09	229918 (T15; 2.1Nm)
42/4	XXX	1.5	32	16	09	229918 (T15; 2.1Nm)
40/4L	XXX	2.5	40	22	12	229919 (T15; 3.1 Nm)
42/5	XXX	1.5	32	16	09	229918 (T15; 2.1Nm)
50/4	XXX	2.5	40	22	12	229919 (T15; 3.1Nm)
50/5	XXX	1.5	40	22	09	229918 (T15; 2.1Nm)
50/6	XXX	1.5	40	22	09	229918 (T15; 2.1Nm)
50/6L	XXX	2.5	40	22	12	229919 (T15; 3.1 Nm)
52/3	XXX	2.5	40	22	12	229919 (T15; 3.1Nm)
52/4	XXX	2.5	40	22	12	229919 (T15; 3.1Nm)
52/5	XXX	2.5	40	22	12	229919 (T15; 3.1Nm)
63/4	XXX	2.5	40	22	12	229919 (T15; 3.1Nm)
63/5	XXX	2.5	40	22	12	229919 (T15; 3.1Nm)
63/5L	XXX	3.5	40	22	16	229920 (TP20; 7,6Nm)
63/7	XXX	2.5	40	22	12	229919 (T15; 3.1 Nm)
66/4	XXX	2.5	45	27	12	229919 (T15; 3.1Nm)
66/5	XXX	2.5	45	27	12	229919 (T15; 3.1Nm)
66/5L	(XXX)	1.5	50	27	09	229918 (T15; 2.1Nm)
80/5	XXX	2.5	50	27	12	229919 (T15; 3.1Nm)
80/6	(XXX)	3.5	50	27	16	229920 (TP20; 7,6Nm)
80/8	XXX	2.5	50	27	12	229919 (T15; 3.1Nm)
100/6	(XXX)	2.5	50	32	12	229919 (T15; 3.1Nm)
100/8	(XXX)	3.5	50	32	16	229920 (TP20; 7,6Nm)
100/9	(XXX)	2.5	50	32	12	229919 (T15; 3.1Nm)
125/8	(XXX)	2.5	63	40	12	229919 (T15; 3.1Nm)
125/11	(XXX)	2.5	63	40	12	229919 (T15; 3.1Nm)
125/10	(XXX)	3.5	63	40	16	229920 (TP20; 7,6Nm)
160/12	(XXX)	3.5	63	50	16	229920 (TP20; 7,6Nm)



KENNAMETAL Indexable inserts for high feed rate milling cutters No. 221900 – 221908

Particularly thick indexable inserts with ground wiper chamfer.

Note: Standard application values for $a_e = 0.3 \times D$.

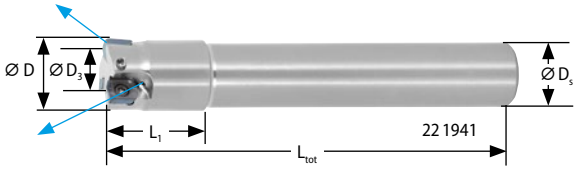
Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	K						
GH2		800	600																	●	○		○
X500					230	180	140							200	170	60		●		●	○	●	●
X400				260	240	200	150	110														●	●
SC6525				340	260	210	180	155												○	○	●	●
SP6519				280	250	185	150	130						210	160	50	220	●		○	○	●	●
SC3025																	260					●	●

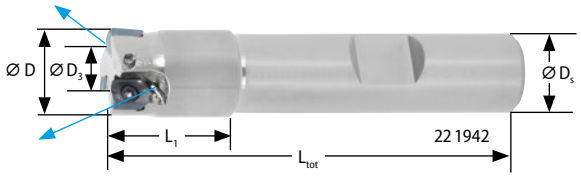
Indexable insert size		mm	06	09	12	16		f_z mm
28E 22 1920	X. LT... ER-D721	GH2	XXX	XXX	XXX	–	10	0.2 – 1.5
28F 22 1923	XDLW... SR-D	X500	–	XXX	XXX	–	10	0.3 – 2.5
28F 22 1925	X. LT.. ER-D41	X400	XXX	XXX	XXX	XXX	10	0.2 – 1.8
28E 22 1926	X.LW...SR-S	SC6525	XXX	XXX	–	–	10	0.2 – 3
28E 22 1927	X. LT.. ER-D41	SC6525	XXX	XXX	XXX	XXX	10	0.2 – 2.5
28E 22 1940	XDPT..ER-D41	SC6525	–	XXX	XXX	–	10	0.2 – 2.5
28E 22 1928	X.LT...ER-D411	SP6519	XXX	XXX	XXX	–	10	0.2 – 2.5
28F 22 1930		X500	–	XXX	XXX	–	10	0.3 – 1.4
28E 22 1933	X. L... SR-D	SC3025	–	XXX	XXX	XXX	10	0.3 – 2
28E 22 1935	X. LT... ER-D41	SP6519	XXX	XXX	XXX	XXX	10	0.3 – 2.5
28E 22 1936	XDPT..ER-D41	SP6519	–	XXX	XXX	–	10	0.3 – 2.5
28F 22 1938	X. LT... ER-D41	X500	XXX	XXX	XXX	XXX	10	0.15 – 1
28F 22 1939	XDPT..ER-D41	X500	–	XXX	XXX	–	10	0.15 – 1
ISO code indexable insert			XP..0603	XD..0904	XD..1205	XE..1605		
Type (22 1920)			Alu	Alu	Alu	–		
Type (22 1923)			–	ST900	ST900	–		
Type (22 1925, 22 1926, 22 1927, 22 1940)			ST1400					
Type (22 1928, 22 1930)			INOX; Ti	INOX; Ti	INOX; Ti	–		
Type (22 1933)			–	GG	GG	GG		
Type (22 1935, 22 1936, 22 1938, 22 1939)			Uni					
Programming radius at $a_{p\,max}$ (22 1920, 22 1923, 22 1925, 22 1926, 22 1927, 22 1940, 22 1933, 22 1935, 22 1936, 22 1938, 22 1939)		mm	1.37	2.01	2.5	4.18		
Programming radius at $a_{p\,max}$ (22 1928, 22 1930)		mm	1.37	2.27	2.73	–		

HPC

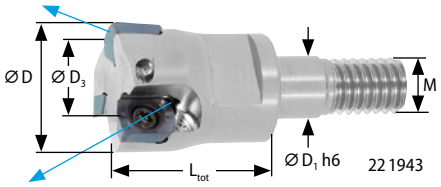
KYOCERA High feed rate indexable milling cutter MFH micro for indexable inserts LPGT 0102..

For extremely cost-effective machining due to high feed rates. Vibration is minimised by cutting force reduction.





Ø D / number of effective cutting edges Z	250 22 1941	250 22 1942	Number of cutting edges Z	Ø D_3	$a_{p\,max}$	L_1	L_{tot}		Ø D_s h6	Circular interpolation milling Ø D_{min}	Circular interpolation milling Ø D_{max}	Ramping angle α_{max}	Ramping length L for α_{max}	Insert screw
	High feed rate milling cutter MFH micro						22 1941	22 1942						
mm	Plain shank	Weldon shank		mm	mm	mm	mm	mm	mm	mm	mm	degrees	mm	
8/1			1	4.2	0.5	16	75	58	10	12.5	14	4	7.1	229722 (6IP; 0.6Nm)
10/2			2	6.2	0.5	20	80	60	10	16.5	18	3	9.5	229722 (6IP; 0.6Nm)
12/3			3	8.2	0.5	20	80	65	12	20.5	22	2	14.3	229722 (6IP; 0.6Nm)
14/3	XXX	XXX	3	10.2	0.5	20	80	65	12	24.5	26	1.5	19.1	229722 (6IP; 0.6Nm)
16/4	XXX	XXX	4	12.2	0.5	25	90	73	16	28.5	30	1.2	23.8	229722 (6IP; 0.6Nm)



Ø D / number of effective cutting edges Z	250 22 1943	Number of cutting edges Z	Ø D_3	$a_{p\,max}$	Ø D_1 h6	L_{tot}	Mounting thread M	Circular interpolation milling Ø D_{min}	Circular interpolation milling Ø D_{max}	Ramping angle α_{max}	Ramping length L for α_{max}	Insert screw
	High feed rate milling cutter MFH micro with thread											
mm			mm	mm	mm	mm		mm	mm	degrees	mm	
8/1	XXX	1	4.2	0.5	6.5	17	M6	12.5	14	4	7.1	229722 (6IP; 0.6Nm)
10/2	XXX	2	6.2	0.5	6.5	17	M6	16.5	18	3	9.5	229722 (6IP; 0.6Nm)
12/3	XXX	3	8.2	0.5	6.5	17	M6	20.5	22	2	14.3	229722 (6IP; 0.6Nm)
14/3	XXX	3	10.2	0.5	6.5	17	M6	24.5	26	1.5	19.1	229722 (6IP; 0.6Nm)
16/4	XXX	4	12.2	0.5	8.5	22	M8	28.5	30	1.2	23.8	229722 (6IP; 0.6Nm)

KYOCERA Milling inserts LPGT0102.. for high feed rate indexable milling cutter MFH micro

2-edge indexable insert.

Note: Standard application values for $a_e = 0.3 \times D$ / $a_p = 0.3$ mm.

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	Inconel®	GG(G)					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	S	K					
22 1946				200	180	160	140	100										180	○		●	●	
22 1947														160	120	60			○		●	●	
22 1949														240			30		●		○	○	

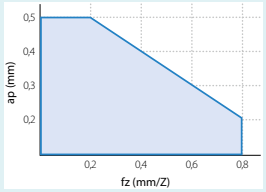
Type			ST1400	INOX	S		f_z mm
25A 22 1946	LPGT 010210 ER-GM	PR1525	XXX	–	–	10	0.4
25A 22 1947		PR1535	–	XXX	–	10	0.3
25A 22 1949		CA6535	–	–	XXX	10	0.25
Programming radius at $a_{p\,max}$		mm	1.2				

22 1946

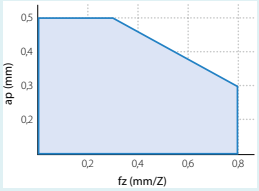
22 1947

22 1949

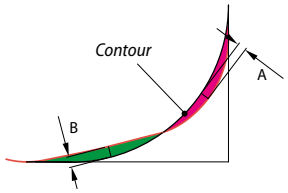
Application notes for the MFH micro



Ø 8 to 12 mm



Ø 14 to 16 mm

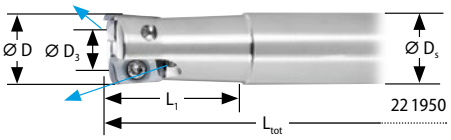


Programmed radius mm	Maximum machined contour mm (A)	Maximum unmachined contour mm (B)
1.0	0	0.21
1.2	0	0.17
1.5	0.08	0.1
2.0	0.28	0.01

HPC

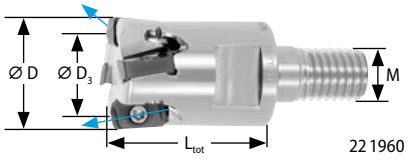
KYOCERA High feed rate indexable milling cutter MFH mini for inserts LOGU 0303..

∅ D / number of teeth Z	250 22 1950	250 22 1955	∅ D_3	$a_{p\,max}$	L_1	L_{tot}		∅ D_s h6	Insert screw
	High feed rate milling cutter MFH mini					22 1950	22 1955		
mm	Plain shank	Weldon shank	mm	mm	mm	mm	mm	mm	
16/2	XXX	XXX	8	1	30	100	79	16	229713 (8IP; 1.2 Nm)
16/2L	XXX	–	8	1	50	150	–	16	229713 (8IP; 1.2 Nm)
17/2	XXX	–	9	1	20	100	–	16	229713 (8IP; 1.2 Nm)
20/3	XXX	XXX	12	1	50	130	101	20	229713 (8IP; 1.2 Nm)
20/3L	XXX	–	12	1	80	160	–	20	229713 (8IP; 1.2 Nm)
20/4	XXX	XXX	12	1	50	130	101	20	229713 (8IP; 1.2 Nm)
22/3	XXX	–	14	1	30	130	–	20	229713 (8IP; 1.2 Nm)
25/4	XXX	XXX	17	1	60	140	117	25	229713 (8IP; 1.2 Nm)
25/4L	XXX	–	17	1	100	180	–	25	229713 (8IP; 1.2 Nm)
25/5	XXX	XXX	17	1	60	140	117	25	229713 (8IP; 1.2 Nm)
32/5	XXX	XXX	24	1	70	150	131	32	229713 (8IP; 1.2 Nm)
32/5L	XXX	–	24	1	120	200	–	32	229713 (8IP; 1.2 Nm)



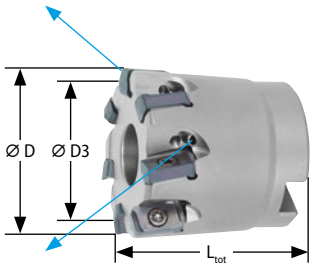
22 1950

∅ D / number of teeth Z	250 22 1960	∅ D_3	$a_{p\,max}$	L_{tot}	Mounting thread M	Insert screw
	High feed rate milling cutter MFH mini with thread					
mm		mm	mm	mm		
16/2	XXX	8	1	25	M8	229713 (8IP; 1.2 Nm)
20/3	XXX	12	1	30	M10	229713 (8IP; 1.2 Nm)
20/4	XXX	12	1	30	M10	229713 (8IP; 1.2 Nm)
22/4	XXX	14	1	30	M10	229713 (8IP; 1.2 Nm)
25/4	XXX	17	1	35	M12	229713 (8IP; 1.2 Nm)
25/5	XXX	17	1	35	M12	229713 (8IP; 1.2 Nm)
28/4	XXX	20	1	35	M12	229713 (8IP; 1.2 Nm)
28/5	XXX	20	1	35	M12	229713 (8IP; 1.2 Nm)
32/5	XXX	24	1	40	M16	229713 (8IP; 1.2 Nm)
32/6	XXX	24	1	40	M16	229713 (8IP; 1.2 Nm)
35/6	XXX	27	1	40	M16	229713 (8IP; 1.2 Nm)
40/5	XXX	32	1	40	M16	229713 (8IP; 1.2 Nm)
42/5	XXX	34	1	40	M16	229713 (8IP; 1.2 Nm)
42/7	XXX	34	1	40	M16	229713 (8IP; 1.2 Nm)



22 1960

∅ D / number of effective cutting edges Z	250 22 1965	∅ D_3	$a_{p\,max}$	L_{tot}	Mounting bore ∅	Insert screw
	High feed rate milling cutter MFH mini with bore					
mm		mm	mm	mm	mm	
40/5	XXX	32	1	40	16	229713 (8IP; 1.2 Nm)
40/7	XXX	32	1	40	16	229713 (8IP; 1.2 Nm)
42/5	XXX	34	1	40	16	229713 (8IP; 1.2 Nm)
42/7	XXX	34	1	40	16	229713 (8IP; 1.2 Nm)
50/5	XXX	42	1	50	22	229713 (8IP; 1.2 Nm)
50/8	XXX	42	1	50	22	229713 (8IP; 1.2 Nm)
52/5	XXX	44	1	50	22	229713 (8IP; 1.2 Nm)
52/8	XXX	44	1	50	22	229713 (8IP; 1.2 Nm)
63/8	XXX	55	1	40	22	229713 (8IP; 1.2 Nm)
66/8	XXX	58	1	40	22	229713 (8IP; 1.2 Nm)



22 1965

KYOCERA Milling insert LOGU 0303.. for high feed rate indexable milling cutter MFH mini

Double-sided indexable insert with 4 cutting edges. The convex cutting edge version of the insert ensures gentle entry of the cutting edge into the material.

Note: Standard application values for $a_e = 0.3 \times D$ / $a_{p\,max} = 1$ mm.

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	Inconel®	GG(G)					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	S	K					
22 1970				200	180	160	140	100											○		●	●	
22 1972														160	120	40			○		●	●	
22 1974																		180	○		●	●	
22 1976																	30		●		○	○	

Type			ST1400	INOX	GG	S		f_z mm
25A 22 1970	LOGU 030310 ER-GM	PR1525	XXX	–	–	–	10	0.2 – 1.5
25A 22 1972		PR1535	–	XXX	–	–	10	0.2 – 1.9
25A 22 1974		PR1510	–	–	XXX	–	10	0.2 – 1.5
25A 22 1976		CA6535	–	–	–	XXX	10	0.2 – 0.8
Programming radius at $a_{p\,max}$		mm	1.6					

22 1976

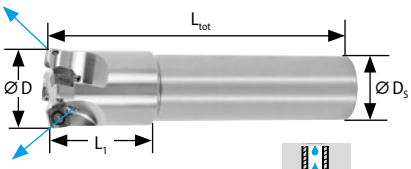
HPC

KYOCERA MFH Harrier high feed rate indexable milling cutter for SOMT.. indexable inserts

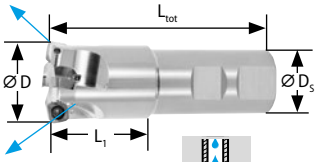
22 2065 Size 160/8 – Without through-coolant feed.

Description: MFH Harrier high feed rate indexable face mills enable short machining times thanks to high feed rates and high cutting depths. The approach angle in combination with the convex cutting edges reduces the cutting forces and minimises the tendency to vibrate.

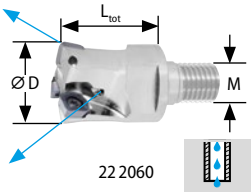
Application: For increased productivity in face milling, pocket milling and slot milling. Because the cutting forces are so low, large overhangs for plunge milling pose no problem.



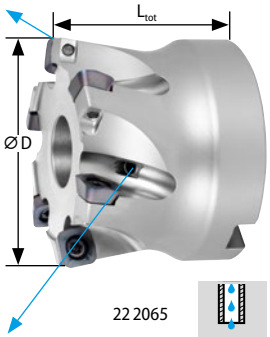
22 2050



22 2055



22 2060



22 2065

Ø D / number of teeth Z	250 22 2050	250 22 2055	Number of cutting edges Z	$a_{p\,max}$	$a_{p\,max}$ for LD geometry	L_1	L_{tot}		Ø D_s h6	Indexable insert size	Insert screw
	High feed rate milling cutter MFH Harrier						22 2050	22 2055			
mm	Plain shank	Weldon shank		mm	mm	mm	mm	mm	mm		
25/2	XXX	XXX	2	1.5	3.5	60	140	117	25	10	229717 (15IP; 3.5 Nm)
25/2L	XXX	–	2	1.5	3.5	120	200	–	25	10	229717 (15IP; 3.5 Nm)
28/2	XXX	–	2	1.5	3.5	40	140	–	25	10	229717 (15IP; 3.5 Nm)
28/2L	XXX	–	2	1.5	3.5	40	200	–	25	10	229717 (15IP; 3.5 Nm)
32/2	XXX	–	2	1.5	3.5	70	150	–	32	10	229717 (15IP; 3.5 Nm)
32/2L	XXX	–	2	1.5	3.5	120	200	–	32	10	229717 (15IP; 3.5 Nm)
32/3	XXX	XXX	3	1.5	3.5	70	150	131	32	10	229717 (15IP; 3.5 Nm)
35/2	XXX	–	2	1.5	3.5	50	150	–	32	10	229717 (15IP; 3.5 Nm)
35/2L	XXX	–	2	1.5	3.5	50	200	–	32	10	229717 (15IP; 3.5 Nm)
35/3	XXX	–	3	1.5	3.5	50	150	–	32	10	229717 (15IP; 3.5 Nm)
40/3	XXX	XXX	3	1.5	3.5	50	150	112	32	10	229717 (15IP; 3.5 Nm)
40/4	XXX	XXX	4	1.5	3.5	50	150	112	32	10	229717 (15IP; 3.5 Nm)
40/4L	XXX	–	4	1.5	3.5	50	250	–	32	10	229717 (15IP; 3.5 Nm)
50/3	XXX	–	3	2	5	50	150	–	42	14	229719 (20 IP; 4.5 Nm)
63/4	XXX	–	4	2	5	50	150	–	42	14	229719 (20 IP; 4.5 Nm)
80/5	XXX	–	5	2	5	50	150	–	42	14	229719 (20 IP; 4.5 Nm)

Ø D / number of teeth Z	250 22 2060	Number of cutting edges Z	$a_{p\,max}$	$a_{p\,max}$ for LD geometry	L_{tot}	Mounting thread M	Indexable insert size	Insert screw
	High feed rate milling cutter MFH Harrier with threaded shank							
mm			mm	mm	mm			
25/2	XXX	2	1.5	3.5	35	M12	10	229717 (15IP; 3.5 Nm)
28/2	XXX	2	1.5	3.5	35	M12	10	229717 (15IP; 3.5 Nm)
32/2	XXX	2	1.5	3.5	40	M16	10	229717 (15IP; 3.5 Nm)
32/3	XXX	3	1.5	3.5	40	M16	10	229717 (15IP; 3.5 Nm)
35/2	XXX	2	1.5	3.5	40	M16	10	229717 (15IP; 3.5 Nm)
35/3	XXX	3	1.5	3.5	40	M16	10	229717 (15IP; 3.5 Nm)
40/3	XXX	3	1.5	3.5	40	M16	10	229717 (15IP; 3.5 Nm)
40/4	XXX	4	1.5	3.5	40	M16	10	229717 (15IP; 3.5 Nm)

Ø D / number of teeth Z	250 22 2065	$a_{p\,max}$	$a_{p\,max}$ for LD geometry	L_{tot}	Mounting bore Ø	Indexable insert size	Insert screw
	High feed rate milling cutter MFH Harrier with bore						
mm		mm	mm	mm	mm		
50/4	XXX	1.5	3.5	50	22	10	229718 (15IP; 3.5 Nm)
50/5	XXX	1.5	3.5	50	22	10	229718 (15IP; 3.5 Nm)
52/4	XXX	1.5	3.5	50	22	10	229718 (15IP; 3.5 Nm)
52/5	XXX	1.5	3.5	50	22	10	229718 (15IP; 3.5 Nm)
63/5	XXX	1.5	3.5	50	22	10	229718 (15IP; 3.5 Nm)
63/6	XXX	1.5	3.5	50	22	10	229718 (15IP; 3.5 Nm)
63/5S	XXX	1.5	3.5	50	27	10	229718 (15IP; 3.5 Nm)
63/6S	XXX	1.5	3.5	50	27	10	229718 (15IP; 3.5 Nm)
80/7	XXX	1.5	3.5	63	27	10	229718 (15IP; 3.5 Nm)
63/4	XXX	2	5	50	22	14	229719 (20 IP; 4.5 Nm)
63/5L	XXX	2	5	50	22	14	229719 (20 IP; 4.5 Nm)
63/4S	XXX	2	5	50	27	14	229719 (20 IP; 4.5 Nm)
63/5SL	XXX	2	5	50	27	14	229719 (20 IP; 4.5 Nm)
66/4	XXX	2	5	50	22	14	229719 (20 IP; 4.5 Nm)
66/5L	XXX	2	5	50	22	14	229719 (20 IP; 4.5 Nm)
66/4S	XXX	2	5	50	27	14	229719 (20 IP; 4.5 Nm)
66/5SL	XXX	2	5	50	27	14	229719 (20 IP; 4.5 Nm)
80/5	XXX	2	5	63	27	14	229719 (20 IP; 4.5 Nm)
80/6	XXX	2	5	63	27	14	229719 (20 IP; 4.5 Nm)
100/6	XXX	2	5	63	32	14	229719 (20 IP; 4.5 Nm)
100/7	XXX	2	5	63	32	14	229719 (20 IP; 4.5 Nm)
125/7	XXX	2	5	63	40	14	229719 (20 IP; 4.5 Nm)
160/8	XXX	2	5	63	40	14	229719 (20 IP; 4.5 Nm)

KYOCERA SOMT.. milling inserts for high feed rate MFH indexable milling cutters

4-edge indexable inserts with convex cutting edges for low cutting forces.

Application:

22 2070–2076 – **FL geometry** is the first choice for general machining.

22 2078–2084 – **LD geometry** is also suitable for high cutting depths ($a_{p\,max}$= 5 mm) at moderate feed rates.
Do not use for helical, plunging or contour milling, or on steep walls.

22 2086–2092 – **FL geometry** (surface-oriented) is the first choice for roughing on lower-powered machines.
Do not use for helical, plunging or contour milling, or on steep walls.

Note:	Standard application values for a_e = 0.3×D.

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	Inconel®	GG(G)					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	S	K					
PR1525 -				**200**	**180**	**160**	**140**	**100**												○		●	●
PR1535 -														**160**	**120**	**40**				○		●	●
PR1510 -																		**180**		○		●	●
CA6535 -																	**30**			○		●	●

22 2078_10

22 2076_14

Type			10	14	
25A **22 2070**	SOMT....20ER-GM	**PR1525**	XXX	XXX	**10**
25A **22 2072**		**PR1535**	XXX	XXX	**10**
25A **22 2074**		**PR1510**	XXX	XXX	**10**
25A **22 2076**		**CA6535**	XXX	XXX	**10**
25A **22 2078**	SOMT....20ER-LD	**PR1525**	XXX	XXX	**10**
25A **22 2080**		**PR1535**	XXX	XXX	**10**
25A **22 2082**		**PR1510**	XXX	XXX	**10**
25A **22 2084**		**CA6535**	XXX	XXX	**10**
25A **22 2086**	SOMT..... ER-FL	**PR1525**	XXX	XXX	**10**
25A **22 2088**		**PR1535**	XXX	XXX	**10**
25A **22 2090**		**PR1510**	XXX	XXX	**10**
25A **22 2092**		**CA6535**	XXX	XXX	**10**
Programming radius at $a_{p\,max}$ (22 2070, 22 2072, 22 2074, 22 2076)		mm	3	3.5	
Programming radius at $a_{p\,max}$ (22 2078, 22 2080, 22 2082, 22 2084)		mm	3.5	5	
Programming radius at $a_{p\,max}$ (22 2086, 22 2088, 22 2090, 22 2092)		mm	3		
f_z (22 2070)		mm	0.2 – 2		
f_z (22 2072, 22 2088)		mm	0.5 – 1.8		
f_z (22 2074, 22 2090)		mm	0.5 – 2		
f_z (22 2076)		mm	0.5 – 1.2		
f_z (22 2078)		mm	0.03 – 2		
f_z (22 2080)		mm	0.06 – 1.8		
f_z (22 2082)		mm	0.06 – 2		
f_z (22 2084)		mm	0.03 – 1.2		
f_z (22 2086, 22 2092)		mm	0.2 – 1.2		

KYOCERA MFAH – Highly efficient milling cutters for finish machining of aluminium

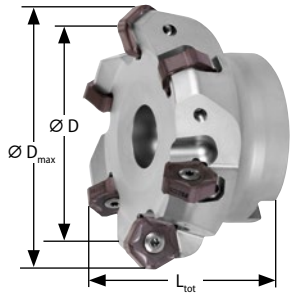
Wide range with different types of cutting edge
for **a wide variety of milling applications.**
Steel or hybrid body with through-coolant.
Low cutting forces minimise the formation of burrs
and chip abrasion, and ensure **high-quality machining results.**

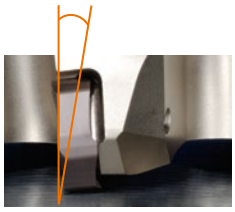
47.5° HPC

KYOCERA

MFPN45 47.5° indexable face mill for PN.U 1205 milling inserts

High performance face milling cutter with double-sided pentagonal indexable inserts. The combination of approach angle, chip chamber design as well as the geometries and cutting angles of the indexable inserts ensure outstanding metal removal rates, chip clearance, working life, and low cutting forces, and hence high cost-effectiveness.





Low cutting force due to high axial rake (maximum +10°).

∅ D / number of teeth Z	250 22 2800 Indexable face mill 47.5° MFPN45 with bore	$a_{p\,max}$	Ø D_{max}	L_{tot}	Mounting bore ∅	Insert screw	Shim	Clamp screw for shim
mm		mm	mm	mm	mm			
63/4	XXX	6	76	40	22	229700	229750	229702 (SW5; 6,0 Nm)
63/5	XXX	6	76	40	22	229700	–	–
63/6	XXX	6	76	40	22	229701	–	–
80/5	XXX	6	93	50	27	229700	229750	229702 (SW5; 6,0 Nm)
80/6	XXX	6	93	50	27	229700	–	–
80/8	XXX	6	93	50	27	229701	–	–
100/6	(XXX)	6	113	50	32	229700	229750	229702 (SW5; 6,0 Nm)
100/8	XXX	6	113	50	32	229700	–	–
100/10	XXX	6	113	50	32	229701	–	–
125/7	(XXX)	6	138	63	40	229700	229750	229702 (SW5; 6,0 Nm)
125/10	XXX	6	138	63	40	229700	–	–
125/13	(XXX)	6	138	63	40	229701	–	–
160/8	(XXX)	6	173	63	40	229700	229750	229702 (SW5; 6,0 Nm)
160/12	(XXX)	6	173	63	40	229700	–	–
200/10	(XXX)	6	213	63	60	229700	229750	229702 (SW5; 6,0 Nm)
200/14	XXX	6	213	63	60	229700	–	–
250/12	(XXX)	6	263	63	60	229700	229750	229702 (SW5; 6,0 Nm)
250/16	(XXX)	6	263	63	60	229700	–	–

KYOCERA

Inserts PN... for indexable face mill No. 222800

22 2825/2826 – WIPER indexable inserts for the best surface quality. Only 1 wiper indexable insert per set.
Make sure it is fitted correctly!

Note: Standard application values for $a_e = 0.3 \times D$.

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	K						
PR1525 / PR1225				**200**	**180**	**180**	**140**	**140**						**150**	**140**			●		○	○	●	●
PR1510																	**180**			○	○	●	●
PR1210																50	**180**			○	○	●	●
CA6535														**240**	**220**	**40**				○	○	●	●
TN100M				**200**	**180**	**180**	**140**	**140**						**150**	**140**		180			○	○	●	●

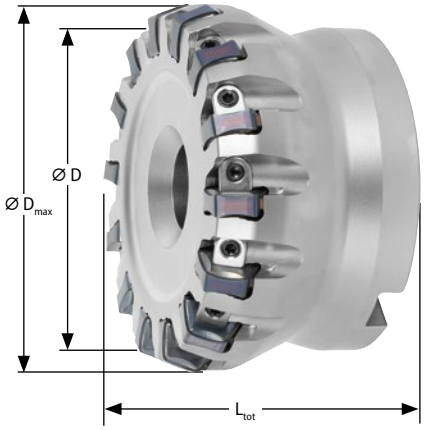
Type			ST1400	INOX	GG	S	UNI	
25A 22 2805	PNMU 1205 ANER-GM	PR1525	XXX	–	–	–	–	10
25A 22 2806	PNMU 1205 ANER-SM	PR1525	XXX	–	–	–	–	10
25A 22 2807	PNMU 1205 ANER-GH	PR1525	XXX	–	–	–	–	10
25A 22 2810	PNMU 1205 ANER-GM	PR1225	XXX	–	–	–	–	10
25A 22 2811	PNMU 1205 ANER-GH	PR1225	XXX	–	–	–	–	10
25A 22 2812	PNMU 1205 ANER-SM	PR1535	–	XXX	–	–	–	10
25A 22 2813		PR1225	–	XXX	–	–	–	10
25A 22 2814	PNMU 1205 ANER-GM	PR1510	–	–	XXX	–	–	10
25A 22 2815	PNMU 1205 ANER-GH	PR1510	–	–	XXX	–	–	10
25A 22 2816	PNMU 1205 ANER-GM	PR1210	–	–	XXX	–	–	10
25A 22 2817	PNEU 1205 ANER-GL	PR1210	–	–	XXX	–	–	10
25A 22 2819	PNMU 1205 ANER-SM	CA6535	–	–	–	XXX	–	10
25A 22 2820	PNEU 1205 ANER-GL	PR1225	–	–	–	–	XXX	10
25A 22 2822		PR1525	–	–	–	–	XXX	10
25A 22 2825	PNEU 1205 ANER-Wiper	TN100M	XXX	–	–	–	–	10
25A 22 2826		PR1525	XXX	–	–	–	–	10
f_z (22 2805, 22 2810, 22 2812, 22 2813, 22 2814, 22 2816, 22 2819, 22 2820, 22 2822)		mm	0.11 – 0.38	0.07 – 0.27	0.11 – 0.44	0.06 – 0.15	–	
f_z (22 2806, 22 2815, 22 2817)		mm	0.07 – 0.27	–	0.06 – 0.25	–	–	
f_z (22 2807, 22 2811)		mm	0.2 – 0.65	–	–	–	–	

70°

KYOCERA Face mill MFK for machining cast iron, for inserts PN.. 1106

Face mills for high-performance machining of cast iron.
Close and very close tooth spacing for maximum productivity when machining cast iron.

Advantage:
- Cost-effective and stable machining by use of 10-edge pentagonal inserts.
- Reduced cutting forces thanks to balanced tool design and high approach angle.



Ø D / number of teeth Z	250 22 3300 Indexable face mill 70° MFK	$a_{p\,max}$	Ø D_{max}	L_{tot}	Mounting bore Ø	Wedge	Wedge screw
mm	**with bore**	mm	mm	mm	mm		
80/8	XXX	6	89	63	27	229720	229721
80/10	XXX	6	89	63	27	229720	229721
100/10	XXX	6	109	63	32	229720	229721
100/14	XXX	6	109	63	32	229720	229721
125/12	XXX	6	134	63	40	229720	229721
125/18	XXX	6	134	63	40	229720	229721
160/16	XXX	6	169	63	40	229720	229721
160/22	XXX	6	169	63	40	229720	229721
200/20	XXX	6	209	63	60	229720	229721
200/28	XXX	6	209	63	60	229720	229721
250/24	(XXX)	6	259	63	60	229720	229721
250/36	(XXX)	6	259	63	60	229720	229721
315/28	(XXX)	6	324	63	60	229720	229721
315/44	(XXX)	6	324	63	60	229720	229721

KYOCERA Milling inserts PN.. 1106 for face mill MFK

10-edge pentagonal indexable inserts for stable and economical machining.
22 3306–3310 – GM - general application.
22 3312–3316 – GH - stable cutting edge.
22 3318–3322 – GL - surface-oriented geometry
22 3324–3328 – W - 2-edge wiper insert.

Note: Standard application values for ae = 0.3×D.

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	Graphite GRP CRP					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	K	N					
CA420M																	**230**					●	●
PR1510 / PR1525																	**180**					●	●
CS7050																	**650**					●	●
KS6050																	**750**					●	●

Type			GG		Plane edge mm
25A **22 3306**	PNMG 1106XNEN-GM	**CA420M**	XXX	**10**	2
25A **22 3308**		**PR1510**	XXX	**10**	2
25A **22 3310**		**PR1525**	XXX	**10**	2
25A **22 3312**	PNMG 1106XNEN-GH	**CA420M**	XXX	**10**	2
25A **22 3314**		**PR1510**	XXX	**10**	2
25A **22 3316**		**PR1525**	XXX	**10**	2
25A **22 3318**	PNEG 1106XNEN-GL	**CA420M**	XXX	**10**	2.6
25A **22 3320**		**PR1510**	XXX	**10**	2.6
25A **22 3322**		**PR1525**	XXX	**10**	2.6
25A **22 3324**	PNEG 1106XNER-W **Wiper**	**CA420M**	XXX	**10**	10
25A **22 3326**		**PR1510**	XXX	**10**	10
25A **22 3328**		**PR1525**	XXX	**10**	10
25G **22 3330**	PNEA 1106XN TN-T01020 **Ceramic**	**CS7050**	XXX	**10**	1.5
25G **22 3332**		**KS6050**	XXX	**10**	1.5
f_z (22 3306, 22 3308, 22 3310)		mm	0.25		
f_z (22 3312, 22 3314, 22 3316)		mm	0.3		
f_z (22 3318, 22 3320, 22 3322)		mm	0.12		
f_z (22 3324, 22 3326, 22 3328)		mm	max. 0.2		
f_z (22 3330, 22 3332)		mm	0.1		

22 3308

22 3312

22 3318

22 3324

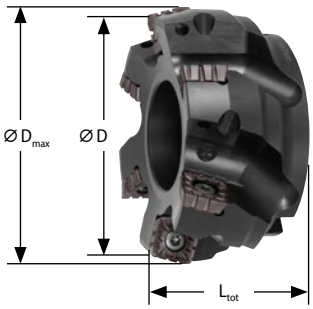
22 3332

75° HPC

KYOCERA Indexable face mill 75° MSRS (Monster Square) for milling inserts SPMT 1806

Cutter head with normal and close-pitch cutter spacing.

Application: Cutting depths up to 12 mm and high feed rates for highly efficient roughing. The innovative notched indexable inserts reduce the cutting pressure, which in turn significantly reduces the tendency to vibrate. This allows a larger cutting width and a significantly increased rate of metal removal.



Ø D / number of teeth Z	25P 22 4000 Indexable face mill 75° MSRS with bore	$a_{p\,max}$	Ø D_{max}	L_{tot}	Mounting bore Ø	Insert screw	Cartridge	Screw for cartridge
mm		mm	mm	mm	mm			
80/4	XXX	12	87	50	27	229703 (T25; 7.5 Nm)	229765	229704
80/6	XXX	12	87	50	27	229703 (T25; 7.5 Nm)	–	–
100/4	XXX	12	107	50	32	229703 (T25; 7.5 Nm)	229765	229704
100/6	XXX	12	107	50	32	229703 (T25; 7.5 Nm)	–	–
125/6	XXX	12	132	60	40	229703 (T25; 7.5 Nm)	229765	229704
125/8	XXX	12	132	60	40	229703 (T25; 7.5 Nm)	–	–
160/8	(XXX)	12	167	60	40	229703 (T25; 7.5 Nm)	229765	229704
160/10	XXX	12	167	60	40	229703 (T25; 7.5 Nm)	–	–
200/10	(XXX)	12	207	60	60	229703 (T25; 7.5 Nm)	229765	229704
200/12	(XXX)	12	207	60	60	229703 (T25; 7.5 Nm)	–	–
250/12	(XXX)	12	257	60	60	229703 (T25; 7.5 Nm)	229765	229704
250/14	(XXX)	12	257	60	60	229703 (T25; 7.5 Nm)	–	–
315/14	(XXX)	12	322	60	60	229703 (T25; 7.5 Nm)	229765	229704
315/16	(XXX)	12	322	60	60	229703 (T25; 7.5 Nm)	–	–

KYOCERA Indexable inserts for indexable face mill 75° MSRS (Monster Square)

Special indexable insert geometry ensures reduced cutting forces and improved chip breaking.
All types with **wiper cutters** for high feed rates.

Application:

22 4010/4011 – **NB2 / NB3:** General application

22 4016/4017/4028/4029 – **NB2T / NB3T:** Ideal for **interrupted cutting**, high cutting speeds and high feed rates.

22 4022/4023 – **NB2P / NB3P:** For **reduced cutting forces.** Specially for large overhangs and thin workpieces.

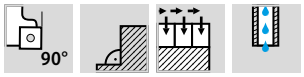
Note: **The milling cutters are alternately equipped with equal numbers of indexable inserts of forms NB2 and NB3.** Comply with the assignment instructions on the cutter. Standard application values for $a_e = 1 \times D$.

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	Graphite GRP CRP					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	K	N					
22 4010–22 4023				**200**	**180**	**180**	**160**	**160**												○	○	●	●
22 4028/4029																	**180**			○	○	●	●

22 4011

22 4028

Type			ST1400	GG		Application
25A **22 4010**	SPMT 1806 EDER-NB2	**PR1230**	XXX	–	**10**	Standard
25A **22 4011**	SPMT 1806 EDER-NB3	**PR1230**	XXX	–	**10**	Standard
25A **22 4016**	SPMT 1806 EDSR-NB2T	**PR1230**	XXX	–	**10**	Roughing
25A **22 4017**	SPMT 1806 EDSR-NB3T	**PR1230**	XXX	–	**10**	Roughing
25A **22 4022**	SPMT 1806 EDER-NB2P	**PR1230**	XXX	–	**10**	soft-cutting
25A **22 4023**	SPMT 1806 EDER-NB3P	**PR1230**	XXX	–	**10**	soft-cutting
25A **22 4028**	SPMT 1806 EDSR-NB2T	**PR1210**	–	XXX	**10**	Roughing
25A **22 4029**	SPMT 1806 EDSR-NB3T	**PR1210**	–	XXX	**10**	Roughing
f_z (22 4010, 22 4011, 22 4016, 22 4017, 22 4028)		mm	0.06 - 0.25	0.06 - 0.15		
f_z (22 4022, 22 4029)		mm	0.06 - 0.3	0.06 - 0.25		
f_z (22 4023)		mm	0.06 - 0.15	–		

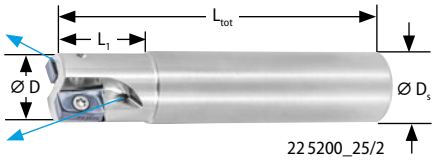


KYOCERA 90° indexable face mill MEW for milling inserts SO.

Cost-efficient due to 4 cutting edges.

22 5200 Size 16/2L – Without internal cooling.

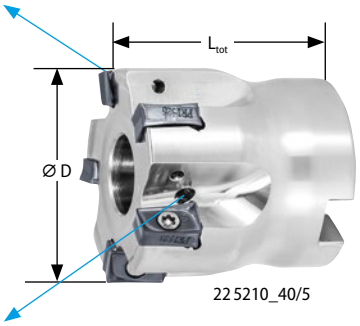
Ø D / number of teeth Z	250	22 5200	$a_{p\,max}$	L_1	L_{tot}	Ø D_s h6	Indexable insert size	Insert screw
		Indexable face mill 90° MEW						
mm		**Plain shank**	mm	mm	mm	mm		
16/2		XXX	10	26	100	16	10	229713 (8IP; 1.2 Nm)
16/2L		XXX	10	23	100	12	10	229713 (8IP; 1.2 Nm)
18/2L		XXX	10	25	100	16	10	229713 (8IP; 1.2 Nm)
20/2		XXX	10	30	110	20	10	229713 (8IP; 1.2 Nm)
20/2L		XXX	10	40	150	20	10	229713 (8IP; 1.2 Nm)
20/2XL		XXX	10	26	110	16	10	229713 (8IP; 1.2 Nm)
20/3		XXX	10	30	110	20	10	229713 (8IP; 1.2 Nm)
22/3L		XXX	10	26	110	20	10	229713 (8IP; 1.2 Nm)
25/3		XXX	10	32	120	25	10	229713 (8IP; 1.2 Nm)
25/3L		XXX	10	29	120	20	10	229713 (8IP; 1.2 Nm)
28/3L		XXX	10	29	120	25	10	229713 (8IP; 1.2 Nm)
30/4L		XXX	10	32	130	25	10	229713 (8IP; 1.2 Nm)
32/4		XXX	10	40	130	32	10	229713 (8IP; 1.2 Nm)
32/4L		XXX	10	32	130	25	10	229713 (8IP; 1.2 Nm)
40/5L		(XXX)	10	50	150	32	10	229713 (8IP; 1.2 Nm)
50/5L		(XXX)	10	40	120	32	10	229713 (8IP; 1.2 Nm)
25/2		XXX	15	32	120	25	15	229714 (15IP; 3.5 Nm)
25/2L		XXX	15	29	120	20	15	229714 (15IP; 3.5 Nm)
32/2		XXX	15	40	130	32	15	229714 (15IP; 3.5 Nm)
32/2L		XXX	15	32	130	25	15	229714 (15IP; 3.5 Nm)
32/3		XXX	15	32	130	32	15	229714 (15IP; 3.5 Nm)
40/3L		(XXX)	15	50	150	32	15	229714 (15IP; 3.5 Nm)
40/4L		(XXX)	15	50	150	32	15	229714 (15IP; 3.5 Nm)
50/4L		(XXX)	15	40	120	32	15	229714 (15IP; 3.5 Nm)



22 5200_25/2

22 5200_16/2L

Ø D / number of teeth Z	250	22 5210	$a_{p\,max}$	L_{tot}	Mounting bore Ø	Indexable insert size	Insert screw
		Indexable face mill 90° MEW					
mm		**with bore**	mm	mm	mm		
32/4		XXX	10	35	16	10	229713 (8IP; 1.2 Nm)
40/5		XXX	10	40	16	10	229713 (8IP; 1.2 Nm)
50/5		XXX	10	40	22	10	229713 (8IP; 1.2 Nm)
63/6		XXX	10	40	22	10	229713 (8IP; 1.2 Nm)
40/4		XXX	15	40	16	15	229714 (15IP; 3.5 Nm)
50/4		XXX	15	40	22	15	229714 (15IP; 3.5 Nm)
63/5		XXX	15	40	22	15	229714 (15IP; 3.5 Nm)
80/6		XXX	15	50	27	15	229714 (15IP; 3.5 Nm)



22 5210_40/5

KYOCERA Indexable inserts LOMU.. for indexable face mills No. 225200 / 5210

MEGACOAT-coated indexable inserts with 4 edges – due to double-sided version. The high axial rake angle up to a maximum of 10° significantly reduces the cutting force.

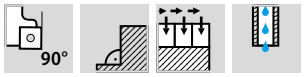
Note: Standard application values for a_e=0.3×D.

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	Graphite GRP CRP					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	K	N					
PR1525				**200**	**180**	**160**	**140**	**140**						**160**	**150**				○	○	●	●	
PR1225				**160**	**140**	**120**	**110**	**110**						**120**	**110**				○	○	●	●	
PR1535														**170**	**160**	**50**			○	○	●	●	
PR1510																50	**180**		○	○	●	●	

Indexable insert size			10	15		f_z mm
25A 22 5220	LOMU...04ER-GM	PR1525	XXX	XXX	10	0.06 – 0.25
25A 22 5223	LOMU...08ER-GM	PR1225	XXX	XXX	10	0.06 – 0.25
25A 22 5225		PR1525	XXX	XXX	10	0.06 – 0.25
25A 22 5226	LOMU...12ER-GM	PR1525	XXX	XXX	10	0.06 – 0.25
25A 22 5230	LOMU...08ER-GH	PR1225	XXX	XXX	10	0.06 – 0.3
25A 22 5227		PR1525	XXX	XXX	10	0.06 – 0.3
25A 22 5232	LOMU...08ER-SM	PR1225	XXX	XXX	10	0.06 – 0.15
25A 22 5235		PR1525	XXX	XXX	10	0.06 – 0.15
25A 22 5237		PR1535	XXX	XXX	10	0.06 – 0.15
25A 22 5240	LOMU...08ER-GM	PR1510	XXX	XXX	10	0.06 – 0.25
Type (22 5220, 22 5223, 22 5225, 22 5226, 22 5230, 22 5227)			ST1400			
Type (22 5232, 22 5235, 22 5237)			INOX			
Type (22 5240)			GG			

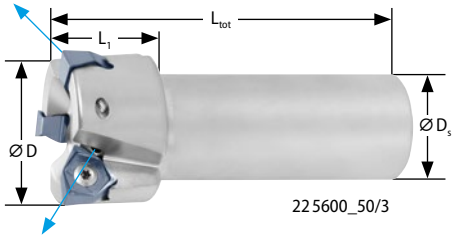
_10

_15



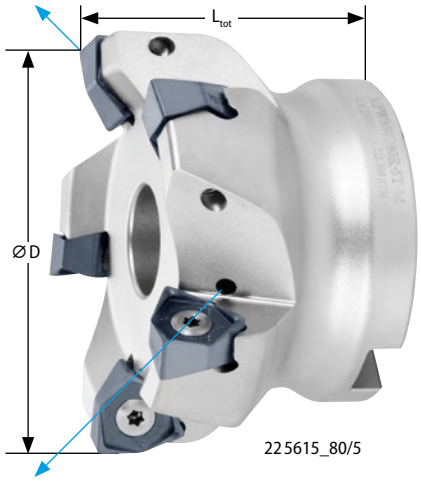
KYOCERA 90° indexable end mill / face mill MFWN for indexable inserts WNMU 0806..

Milling cutter with double-sided indexable inserts.
The combination of approach angle, chip chamber design as well as the geometries and cutting angles of the indexable inserts ensure outstanding metal removal rates, chip clearance, working life, and low cutting forces, and hence high cost-effectiveness.
Size 160/8–250/14 – Without internal cooling.



22 5600_50/3

Ø D / number of teeth Z	250	22 5600	$a_{p\,max}$	L_1	L_{tot}	Ø D_s h6	Insert screw
mm		Indexable end mill 90° MFWN **Plain shank**	mm	mm	mm	mm	
50/3		XXX	8	30	110	32	229700 (T15; 4.2 Nm)
63/4		XXX	8	30	110	32	229700 (T15; 4.2 Nm)
80/5		XXX	8	30	110	32	229700 (T15; 4.2 Nm)



22 5615_80/5

Ø D / number of teeth Z	250	22 5615	$a_{p\,max}$	L_{tot}	Mounting bore Ø	Insert screw	Shim
mm		Indexable face mill 90° MFWN **with bore**	mm	mm	mm		
50/4		XXX	8	40	22	229700 (T15; 4.2 Nm)	–
63/3		XXX	8	40	22	229700 (T15; 4.2 Nm)	229751
63/4		XXX	8	40	22	229700 (T15; 4.2 Nm)	–
63/5		XXX	8	40	22	229700 (T15; 4.2 Nm)	–
80/4		XXX	8	50	27	229700 (T15; 4.2 Nm)	229751
80/5		XXX	8	50	27	229700 (T15; 4.2 Nm)	–
80/7		XXX	8	50	27	229701 (T15; 3.5 Nm)	–
100/5		(XXX)	8	50	32	229700 (T15; 4.2 Nm)	229751
100/7		XXX	8	50	32	229700 (T15; 4.2 Nm)	–
100/9		(XXX)	8	50	32	229701 (T15; 3.5 Nm)	–
125/6		(XXX)	8	63	40	229700 (T15; 4.2 Nm)	229751
125/8		XXX	8	63	40	229700 (T15; 4.2 Nm)	–
125/12		(XXX)	8	63	40	229701 (T15; 3.5 Nm)	–
160/8		(XXX)	8	63	40	229700 (T15; 4.2 Nm)	229751
160/10		(XXX)	8	63	40	229700 (T15; 4.2 Nm)	–
160/14		(XXX)	8	63	40	229701 (T15; 3.5 Nm)	–
200/10		(XXX)	8	63	60	229700 (T15; 4.2 Nm)	229751
200/12		(XXX)	8	63	60	229700 (T15; 4.2 Nm)	–
250/12		(XXX)	8	63	60	229700 (T15; 4.2 Nm)	229751
250/14		(XXX)	8	63	60	229700 (T15; 4.2 Nm)	–

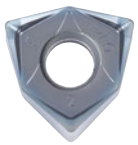
KYOCERA Indexable inserts WNMU.. for indexable end mill / face mill No. 225600 / 5615

MEGACOAT-coated indexable inserts with **6 edges** – due to double-sided version. The high axial rake angle up to a maximum of 13° significantly reduces the cutting force.
22 5627–5630 – Ground version for significantly better surface quality.

Application:

22 5621 – The **GH geometry** is the first choice for roughing applications.
22 5620/5626 – The **GM geometry** is the first choice for general machining.
22 5623/5625 – The **SM geometry** has a highly positive rake and cuts smoothly.
22 5627–5630 – The **GL geometry** is suitable for good surface finishes thanks to the ground version and flat cutting edge.

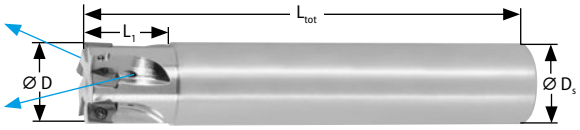
Note: Standard application values for $a_e = 0.3 \times D$.


22 5620_ST1400

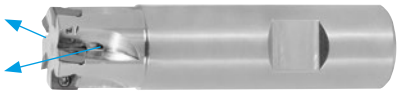
Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	K						
PR1525				**200**	**180**	**160**	**140**	**140**						160	150			●		○	○	●	●
PR1535														**160**	**150**					○	○	●	●
PR1510																50	**180**			○	○	●	●
CA6535														240	200	**40**				○	○	●	●

Type			ST1400	INOX	GG	S	UNI		f_z mm
25A **22 5620**	WNMU 080608 EN-GM	**PR1525**	XXX	–	–	–	–	**10**	0.1 – 0.3
25A **22 5621**	WNMU 080608 EN-GH	**PR1525**	XXX	–	–	–	–	**10**	0.2 – 0.4
25A **22 5623**	WNMU 080608 EN-SM	**PR1525**	–	XXX	–	–	–	**10**	0.06 – 0.2
25A **22 5625**		**PR1535**	–	XXX	–	–	–	**10**	0.06 – 0.2
25A **22 5626**	WNMU 080608 EN-GM	**PR1510**	–	–	XXX	–	–	**10**	0.1 – 0.3
25A **22 5627**	WNEU 080608 EN-GL	**PR1510**	–	–	XXX	–	–	**10**	0.06 – 0.2
25A **22 5628**		**CA6535**	–	–	–	XXX	–	**10**	0.06 – 0.1
25A **22 5630**		**PR1525**	–	–	–	–	XXX	**10**	0.06 – 0.15

KYOCERA 90° end mill / face mill MECX for indexable inserts BDMT 0703..



22 7100



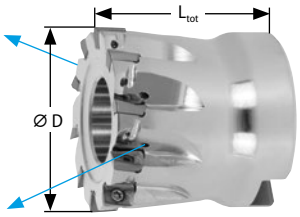
22 7105

Description:

22 7100/7105 – Very close spacing provides improved productivity even under more unstable machining conditions. Low cutting forces and high stability for low tendency to vibrate. Permits various milling tasks such as milling shoulders and ramps etc.

Ø D / number of teeth Z	250 22 7100	250 22 7105	$a_{p\,max}$	L_1	L_{tot}		Ø D_s h6	Insert screw
	End mill 90° MECX				22 7100	22 7105		
mm	Plain shank	Weldon shank	mm	mm	mm	mm	mm	
8/1	XXX	–	6	16	80	–	10	229706 (T6; 0.45 Nm)
10/1	XXX	–	6	17	80	–	10	229706 (T6; 0.45 Nm)
12/2	XXX	–	6	18	80	–	12	229706 (T6; 0.45 Nm)
14/2L	XXX	–	6	18	80	–	12	229706 (T6; 0.45 Nm)
16/3	XXX	XXX	6	20	100	68	16	229707 (T6; 0.45 Nm)
16/4	XXX	XXX	6	20	100	68	16	229707 (T6; 0.45 Nm)
17/3L	XXX	–	6	20	100	–	16	229707 (T6; 0.45 Nm)
17/3XL	XXX	–	6	20	130	–	16	229707 (T6; 0.45 Nm)
18/3L	XXX	–	6	20	100	–	16	229707 (T6; 0.45 Nm)
20/4L	XXX	–	6	20	110	–	16	229707 (T6; 0.45 Nm)
20/5	XXX	XXX	6	20	110	81	20	229707 (T6; 0.45 Nm)
20/5XL	XXX	–	6	20	110	–	16	229707 (T6; 0.45 Nm)
21/4L	XXX	–	6	20	110	–	20	229707 (T6; 0.45 Nm)
21/4XL	XXX	–	6	20	140	–	20	229707 (T6; 0.45 Nm)
25/5L	XXX	–	6	25	120	–	20	229707 (T6; 0.45 Nm)
25/5	–	XXX	6	25	–	88	25	229707 (T6; 0.45 Nm)
25/7	XXX	XXX	6	25	120	88	25	229707 (T6; 0.45 Nm)
26/5L	XXX	–	6	25	120	–	25	229707 (T6; 0.45 Nm)
26/5XL	XXX	–	6	25	160	–	25	229707 (T6; 0.45 Nm)
32/8	XXX	–	6	30	130	–	32	229707 (T6; 0.45 Nm)
33/6L	XXX	–	6	30	130	–	32	229707 (T6; 0.45 Nm)

Ø D / number of teeth Z	250 22 7115	$a_{p\,max}$	L_{tot}	Mounting bore Ø	Insert screw
	Face mill 90° MECX				
mm	with bore	mm	mm	mm	
32/8	XXX	6	40	16	229707 (T6; 0.45 Nm)
40/10	XXX	6	40	22	229707 (T6; 0.45 Nm)



22 7115

KYOCERA Indexable inserts BDMT 0703.. for indexable end mill / face mills No. 227100 – 227115

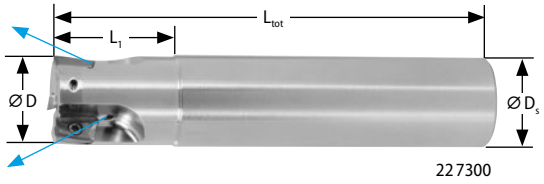
Note: Standard application values for $a_e = 0.3 \times D$. Exactly 90° up to $a_p = 4$ mm.

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	Graphite GRP CRP					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	K	N					
PR1225				200	180	180	140	140						180	180					○	○	●	●
PR1210																	180			○	○	●	●

Type			ST1400	INOX	GG	
25A 22 7135	BDMT 070302 ER-JT	PR1225	XXX	–	–	10
25A 22 7136	BDMT 070304 ER-JT	PR1225	XXX	–	–	10
25A 22 7137	BDMT 070308 ER-JT	PR1225	XXX	–	–	10
25A 22 7145	BDMT 070302 ER-JS	PR1225	–	XXX	–	10
25A 22 7146	BDMT 070304 ER-JS	PR1225	–	XXX	–	10
25A 22 7147	BDMT 070308 ER-JS	PR1225	–	XXX	–	10
25A 22 7155	BDMT 070302 ER-JT	PR1210	–	–	XXX	10
25A 22 7156	BDMT 070304 ER-JT	PR1210	–	–	XXX	10
25A 22 7157	BDMT 070308 ER-JT	PR1210	–	–	XXX	10
f_z		mm	0.07 – 0.11	0.05 – 0.08	0.09 – 0.16	

KYOCERA 90° end mill / face mill MEC11T for indexable inserts BD. T 11T3..

Description: MEC11T mill type with higher stability due to lower number of cutters than MECX. This enables higher feed rates per cutter.



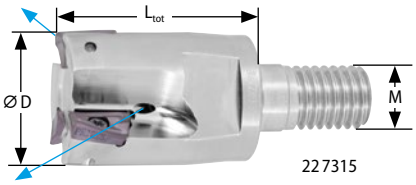
22 7300

22 7305

Note:
22 7300 Size 16/2L – Without internal cooling.

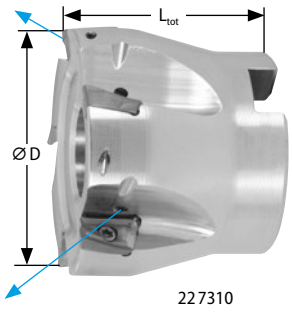
Ø D / number of teeth Z	250 22 7300	250 22 7305	$a_{p\,max}$	L_1	L_{tot}		Ø D_s h6	Insert screw
	End mill 90° MEC11T				22 7300	22 7305		
mm	Plain shank	Weldon shank	mm	mm	mm	mm	mm	
16/2	XXX	XXX	10	25	100	68	16	229708 (T8; 1.2 Nm)
16/2L	XXX	XXX	10	23	100	68	12	229708 (T8; 1.2 Nm)
17/2L	XXX	–	10	23	100	–	16	229708 (T8; 1.2 Nm)
18/2L	XXX	XXX	10	23	100	68	16	229708 (T8; 1.2 Nm)
19/3L	XXX	–	10	26	100	–	16	229708 (T8; 1.2 Nm)
20/2XL	XXX	–	10	30	170	–	18	229708 (T8; 1.2 Nm)
20/3	XXX	–	10	30	110	–	20	229708 (T8; 1.2 Nm)
20/3L	XXX	XXX	10	26	110	68	16	229708 (T8; 1.2 Nm)
21/3L	XXX	–	10	26	110	–	20	229708 (T8; 1.2 Nm)
22/2XL	XXX	–	10	30	170	–	20	229708 (T8; 1.2 Nm)
22/3L	XXX	–	10	26	110	–	20	229708 (T8; 1.2 Nm)
24/3L	XXX	–	10	29	120	–	20	229708 (T8; 1.2 Nm)
25/3	XXX	XXX	10	32	120	88	25	229708 (T8; 1.2 Nm)
25/3L	XXX	–	10	29	120	–	20	229708 (T8; 1.2 Nm)
28/3L	XXX	–	10	29	120	–	25	229708 (T8; 1.2 Nm)
30/4L	XXX	–	10	32	130	–	25	229708 (T8; 1.2 Nm)
32/4	XXX	–	10	40	130	–	32	229708 (T8; 1.2 Nm)
32/4L	XXX	–	10	32	130	–	25	229708 (T8; 1.2 Nm)
40/5L	XXX	–	10	50	150	–	32	229708 (T8; 1.2 Nm)
50/5L	XXX	–	10	50	150	–	32	229708 (T8; 1.2 Nm)

Ø D / number of teeth Z	250 22 7315	$a_{p\,max}$	L_{tot}	Mounting thread M	Insert screw
	End mill 90° MEC11T				
mm	with threaded shank	mm	mm		
16/2	XXX	10	25	M8	229708 (T8; 1.2 Nm)
20/2	XXX	10	30	M10	229708 (T8; 1.2 Nm)
20/3	XXX	10	30	M10	229708 (T8; 1.2 Nm)
25/3	XXX	10	35	M12	229708 (T8; 1.2 Nm)
32/4	XXX	10	40	M16	229708 (T8; 1.2 Nm)



22 7315

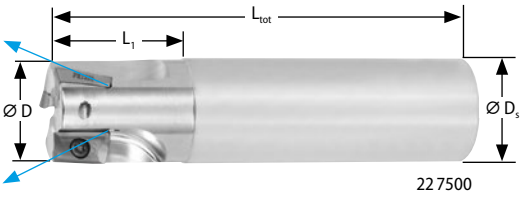
Ø D / number of teeth Z	250 22 7310	$a_{p\,max}$	L_{tot}	Mounting bore Ø	Insert screw
	Face mill 90° MEC11T				
mm	with bore	mm	mm	mm	
40/5	XXX	10	40	16	229708 (T8; 1.2 Nm)
50/5	XXX	10	40	22	229708 (T8; 1.2 Nm)
63/6	XXX	10	40	22	229708 (T8; 1.2 Nm)
80/7	XXX	10	50	27	229708 (T8; 1.2 Nm)
100/9	XXX	10	55	32	229708 (T8; 1.2 Nm)
125/11	XXX	10	63	40	229708 (T8; 1.2 Nm)



22 7310

KYOCERA 90° indexable end mill / face mill MEC17 for indexable inserts BD.T 1704..

Long cutting edges permit exceptionally large cutting depths.
Small number of cutting edges.

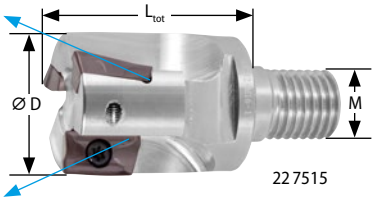


22 7500

22 7505

Ø D / number of teeth Z	250 22 7500	250 22 7505	$a_{p\,max}$	L_1	L_{tot}		Ø D_s h6	Insert screw
	End mill 90° MEC17				22 7500	22 7505		
mm	**Plain shank**	**Weldon shank**	mm	mm	mm	mm	mm	
25/2	XXX	XXX	15.7	36	120	92	25	229709 (T15; 3.5 Nm)
25/2L	XXX	–	15.7	36	120	–	20	229709 (T15; 3.5 Nm)
28/2XL	XXX	–	15.7	36	120	–	25	229709 (T15; 3.5 Nm)
32/3	XXX	XXX	15.7	40	130	100	32	229709 (T15; 3.5 Nm)
32/3L	XXX	–	15.7	40	130	–	25	229709 (T15; 3.5 Nm)
40/4L	XXX	–	15.7	50	150	–	32	229709 (T15; 3.5 Nm)
50/4L	XXX	–	15.7	50	150	–	32	229709 (T15; 3.5 Nm)

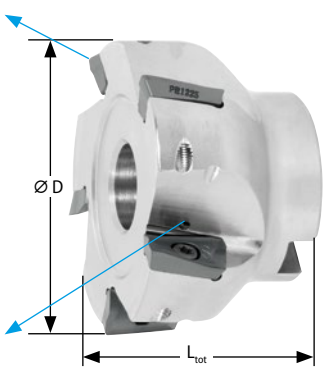
Ø D / number of teeth Z	250 22 7515	$a_{p\,max}$	L_{tot}	Mounting thread M	Insert screw
	End mill 90° MEC17				
mm	**with threaded shank**	mm	mm		
25/2	XXX	15.7	35	M12	229709 (T15; 3.5 Nm)
32/3	XXX	15.7	40	M16	229709 (T15; 3.5 Nm)



22 7515

Note:
Size 160/12 – Without internal cooling.

Ø D / number of teeth Z	250 22 7510	$a_{p\,max}$	L_{tot}	Mounting bore Ø	Insert screw
	Face mill 90° MEC17				
mm	**with bore**	mm	mm	mm	
40/4	XXX	15.7	40	16	229709 (T15; 3.5 Nm)
50/4	XXX	15.7	40	22	229709 (T15; 3.5 Nm)
63/5	XXX	15.7	40	22	229709 (T15; 3.5 Nm)
80/6	XXX	15.7	50	27	229709 (T15; 3.5 Nm)
100/7	(XXX)	15.7	55	32	229709 (T15; 3.5 Nm)
125/9	(XXX)	15.7	63	40	229709 (T15; 3.5 Nm)
160/12	(XXX)	15.7	63	40	229709 (T15; 3.5 Nm)



22 7510

KYOCERA Inserts BD.T 11T3.. for end mills MEC11T No. 227300 – 227315 and inserts BD.T 1704..for end mills No. 227500 – 227515

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	Graphite GRP CRP					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	K	N					
GW25	700	500	250																	○	○	●	●
PR1225				200	180	180	140	140						180	180					○	○	●	●
PR1535														160	160	50				○	○	●	●
CA6535														240	220	30				○	○	●	●
PR1210																50	180			○	○	●	●

Milling inserts BD.T 11T3..

Note: Standard application values for $a_e = 0.3 \times D$. Exactly 90° up to $a_p = 5.5$ mm.

Type			ALU	ST1400	INOX	S	GG	
25A 22 7325	BDGT 11T302 FR-JA	GW25	XXX	–	–	–	–	10
25A 22 7326	BDGT 11T304 FR-JA	GW25	XXX	–	–	–	–	10
25A 22 7327	BDGT 11T308 FR-JA	GW25	XXX	–	–	–	–	10
25A 22 7335	BDMT 11T302 ER-JT	PR1225	–	XXX	–	–	–	10
25A 22 7336	BDMT 11T304 ER-JT	PR1225	–	XXX	–	–	–	10
25A 22 7337	BDMT 11T308 ER-JT	PR1225	–	XXX	–	–	–	10
25A 22 7338	BDMT 11T312 ER-JT	PR1225	–	XXX	–	–	–	10
25A 22 7339	BDMT 11T316 ER-JT	PR1225	–	XXX	–	–	–	10
25A 22 7340	BDMT 11T320 ER-JT	PR1225	–	XXX	–	–	–	10
25A 22 7341	BDMT 11T324 ER-JT	PR1225	–	XXX	–	–	–	10
25A 22 7342	BDMT 11T331 ER-JT	PR1225	–	XXX	–	–	–	10
25A 22 7355	BDMT 11T302 ER-JS	PR1225	–	–	XXX	–	–	10
25A 22 7356	BDMT 11T304 ER-JS	PR1225	–	–	XXX	–	–	10
25A 22 7357	BDMT 11T308 ER-JS	PR1225	–	–	XXX	–	–	10
25A 22 7358	BDMT 11T302 ER-JS	PR1535	–	–	XXX	–	–	10
25A 22 7359	BDMT 11T304 ER-JS	PR1535	–	–	XXX	–	–	10
25A 22 7360	BDMT 11T308 ER-JS	PR1535	–	–	XXX	–	–	10
25A 22 7361	BDMT 11T302 ER-JS	CA6535	–	–	–	XXX	–	10
25A 22 7362	BDMT 11T304 ER-JS	CA6535	–	–	–	XXX	–	10
25A 22 7363	BDMT 11T308 ER-JS	CA6535	–	–	–	XXX	–	10
25A 22 7365	BDMT 11T308 ER-JT	PR1210	–	–	–	–	XXX	10
f_z		mm	0.05 – 0.33	0.07 – 0.11	0.07 – 0.11	0.06 – 0.1	0.09 – 0.16	

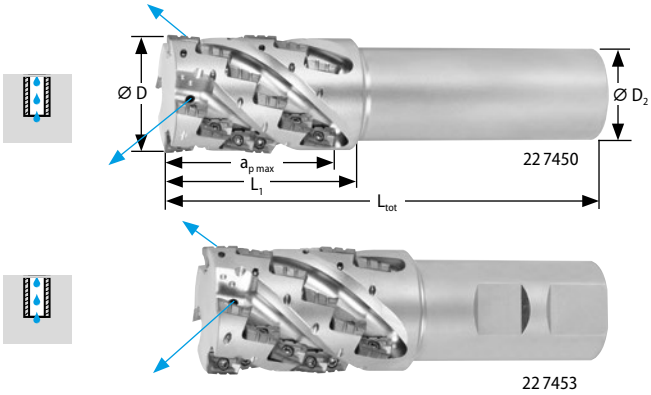
Milling inserts BD.T 1704..

Note: Standard application values for $a_e = 0.3 \times D$. Exactly 90° up to $a_p = 9$ mm.

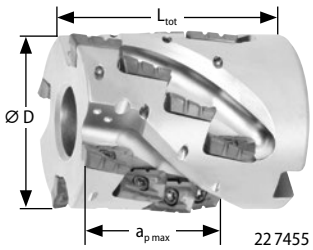
Type			ALU	ST1400	INOX	S	GG	
25A 22 7526	BDGT 170404 FR-JA	GW25	XXX	–	–	–	–	10
25A 22 7527	BDGT 170408 FR-JA	GW25	XXX	–	–	–	–	10
25A 22 7530	BDGT 170420 FR-JA	GW25	XXX	–	–	–	–	10
25A 22 7533	BDGT 170431 FR-JA	GW25	XXX	–	–	–	–	10
25A 22 7536	BDMT 170404 ER-JT	PR1225	–	XXX	–	–	–	10
25A 22 7537	BDMT 170408 ER-JT	PR1225	–	XXX	–	–	–	10
25A 22 7538	BDMT 170412 ER-JT	PR1225	–	XXX	–	–	–	10
25A 22 7539	BDMT 170416 ER-JT	PR1225	–	XXX	–	–	–	10
25A 22 7540	BDMT 170420 ER-JT	PR1225	–	XXX	–	–	–	10
25A 22 7541	BDMT 170424 ER-JT	PR1225	–	XXX	–	–	–	10
25A 22 7543	BDMT 170431 ER-JT	PR1225	–	XXX	–	–	–	10
25A 22 7544	BDMT 170440 ER-JT	PR1225	–	XXX	–	–	–	10
25A 22 7556	BDMT 170404 ER-JS	PR1225	–	–	XXX	–	–	10
25A 22 7557	BDMT 170408 ER-JS	PR1225	–	–	XXX	–	–	10
25A 22 7560	BDMT 170404 ER-JS	PR1535	–	–	XXX	–	–	10
25A 22 7561	BDMT 170408 ER-JS	PR1535	–	–	XXX	–	–	10
25A 22 7564	BDMT 170404 ER-JS	CA6535	–	–	–	XXX	–	10
25A 22 7565	BDMT 170408 ER-JS	CA6535	–	–	–	XXX	–	10
25A 22 7567	BDMT 170408 ER-JT	PR1210	–	–	–	–	XXX	10
f_z		mm	0.05 – 0.33	0.09 – 0.22	0.09 – 0.13	0.07 – 0.13	0.09 – 0.27	

90°

KYOCERA Shell end mill 90° MECH11 for indexable inserts BDMT 11T308



Ø D / Z_{eff}	250 22 7450	250 22 7453	Number of effective inserts Z_{eff}	Number of inserts	$a_{p\,max}$	L_1	L_{tot}		Ø D_s h6	Insert screw
	Shell end mill 90° MECH11						22 7450	22 7453		
mm	Plain shank	Weldon shank			mm	mm	mm	mm	mm	
25/2	XXX	XXX	2	8	37	46	120	104	25	229708 (T8; 1.2 Nm)
32/2	XXX	XXX	2	10	46	55	140	117	32	229708 (T8; 1.2 Nm)
32/4	XXX	XXX	4	20	46	55	140	117	32	229708 (T8; 1.2 Nm)
40/4	XXX	XXX	4	24	55	64	150	126	32	229708 (T8; 1.2 Nm)
50/4	–	XXX	4	28	64	75	–	147	40	229708 (T8; 1.2 Nm)



22 7455

Ø D/Z_{eff}	250 22 7455	Number of effective inserts Z_{eff}	Number of inserts	$a_{p\,max}$	L_{tot}	Mounting bore Ø	Insert screw
	Shell end mill 90° MECH11						
mm	with bore			mm	mm	mm	
40/4	XXX	4	16	37	50	16	229708 (T8; 1.2 Nm)
50/6	XXX	6	30	46	63	22	229708 (T8; 1.2 Nm)

KYOCERA Indexable inserts BDMT 11T308 for shell end mills No. 227450 – 227455

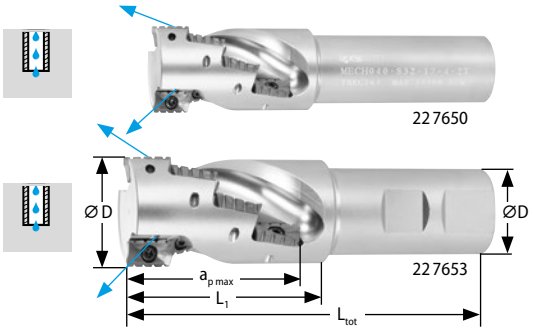
Note: The milling cutters are alternately equipped with equal numbers of indexable inserts shape N2 and N3. Please fit the inserts as marked on the body.
Standard application values for $a_e = 0.3 \times D$.

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	Graphite GRP CRP					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	K	N					
22 7470/7471				**180**	**180**	**180**	**140**	**140**												○	○	●	●
22 7480/7481																	**180**			○	○	●	●

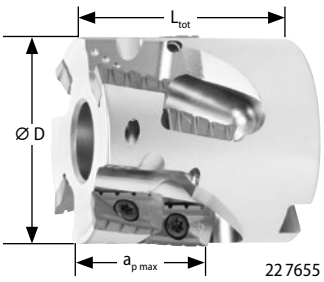
Type			ST1400	GG	
25A 22 7470	BDMT 11T308 ER-N2	PR1225	XXX	–	10
25A 22 7471	BDMT 11T308 ER-N3	PR1225	XXX	–	10
25A 22 7480	BDMT 11T308 ER-N2	PR1210	–	XXX	10
25A 22 7481	BDMT 11T308 ER-N3	PR1210	–	XXX	10
f_z		mm	0.09 – 0.16	0.09 – 0.2	

90°

KYOCERA Shell end mill 90° MECH17 for indexable inserts BDMT 170408



Ø D / Z_{eff}	250 22 7650	250 22 7653	Number of effective inserts Z_{eff}	Number of inserts	$a_{p\,max}$	L_1	L_{tot}		Ø D_s h6	Insert screw
	Shell end mill 90° MECH17						22 7650	22 7653		
mm	Plain shank	Weldon shank			mm	mm	mm	mm	mm	
40/2	XXX	XXX	2	8	59	73	160	136	32	229709 (T15; 3.5 Nm)
50/4	–	XXX	4	20	74	88	–	161	40	229709 (T15; 3.5 Nm)



Ø D / Z_{eff}	250 22 7655	Number of effective inserts Z_{eff}	Number of inserts	$a_{p\,max}$	L_{tot}	Mounting bore Ø	Insert screw
	Shell end mill 90° MECH17						
mm	with bore			mm	mm	mm	
50/4	XXX	4	8	30	52	22	229709 (T15; 3.5 Nm)
50/4L	XXX	4	16	59	78	22	229709 (T15; 3.5 Nm)
63/4	XXX	4	12	45	70	27	229709 (T15; 3.5 Nm)
80/6	XXX	6	24	59	85	32	229709 (T15; 3.5 Nm)
100/6	XXX	6	24	59	85	40	229709 (T15; 3.5 Nm)

KYOCERA Indexable inserts BDMT 170408 for shell end mills No. 227650 – 227655

Note: The milling cutters are alternately equipped with equal numbers of indexable inserts shape N3 and N4. Please fit the inserts as marked on the body.
Standard application values for $a_e = 0.3 \times D$.

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	Graphite GRP CRP					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	K	N					
22 7670/7671				180	180	180	140	140												○	○	●	●
22 7680/7681																	180			○	○	●	●

Type			ST1400	GG	
25A 22 7670	BDMT 170408 ER-N3	PR1225	XXX	–	10
25A 22 7671	BDMT 170408 ER-N4	PR1225	XXX	–	10
25A 22 7680	BDMT 170408 ER-N3	PR1210	–	XXX	10
25A 22 7681	BDMT 170408 ER-N4	PR1210	–	XXX	10
f_z		mm	0.09 – 0.16	0.09 – 0.2	

New products –
Machining – turning

new

We use this symbol to tag new items in our catalogue range

Page **633**
Boring bar with D-clamping

Page **634 – 698**
HOLEX ISO indexable inserts

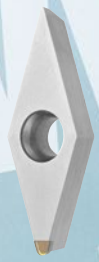
Page **644 – 698**
Extension of the GARANT ISO indexable insert range

Page **660 – 699**
HOLEX screw-on toolholder sets

Page **693 – 695**
Extension of the boring bar range

Page **700**
GL system interchangeable cutting heads

Page **702**
GARANT Master Mute boring bar shanks



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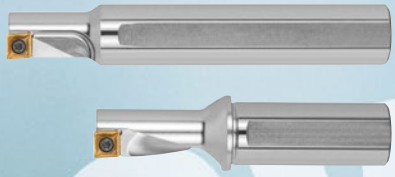
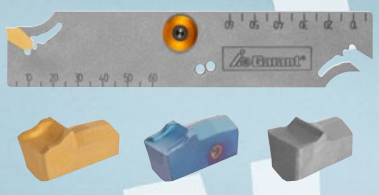
Extension of the MCD range



Page **712**
GARANT 4-in-1 turning and boring tool

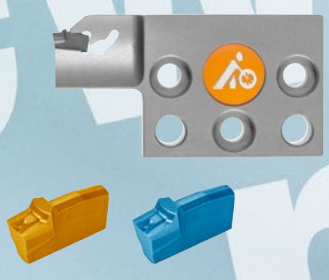
Page **732**
HOLEX threading range



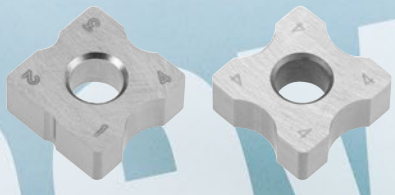
Page **734 – 735**
Extension of the parting-off tool and insert range

Page **736**
HOLEX parting-off range

Page **749**
Carbide tools for axial grooving



Page **754 – 756**
Grooving tools for face grooves



Page **781**
HOLEX radial turning inserts

Machining – Turning

ECOROLL KENNAMETAL only Stellram KOMET KYOCERA

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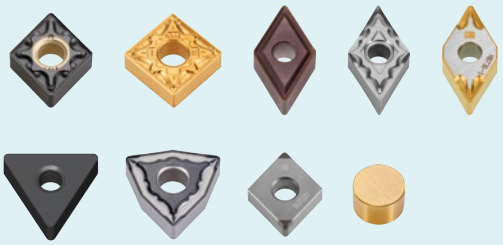
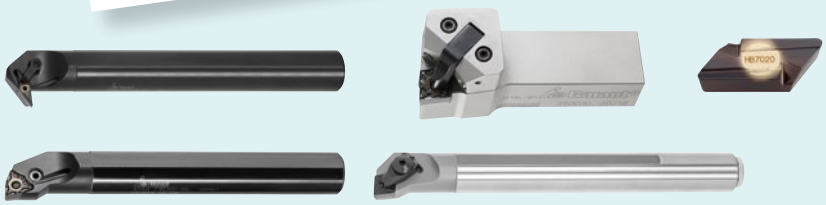
Machining/clamping technology for optimal processes.

Now sorted by **application**
drilling, tapping, milling, turning and clamping.

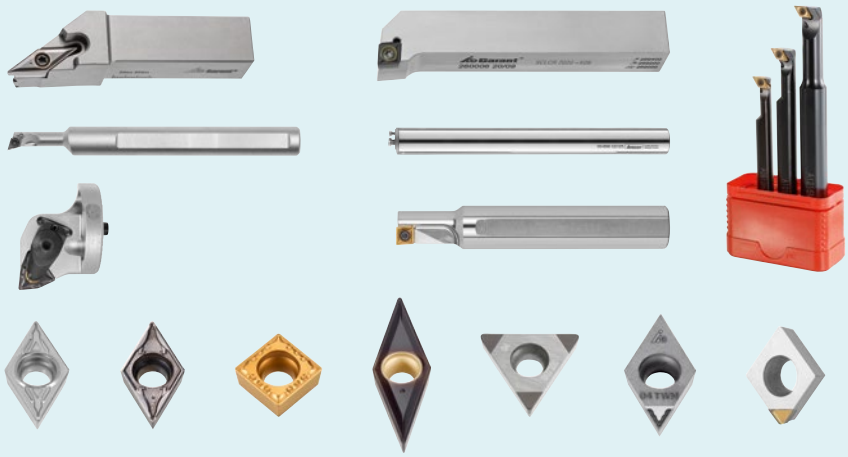




Garant KYOCERA KENNAMETAL HOLEX

Overview of turning
Negative rake inserts (carbide, CBN, ceramic), clamping toolholders, boring bars

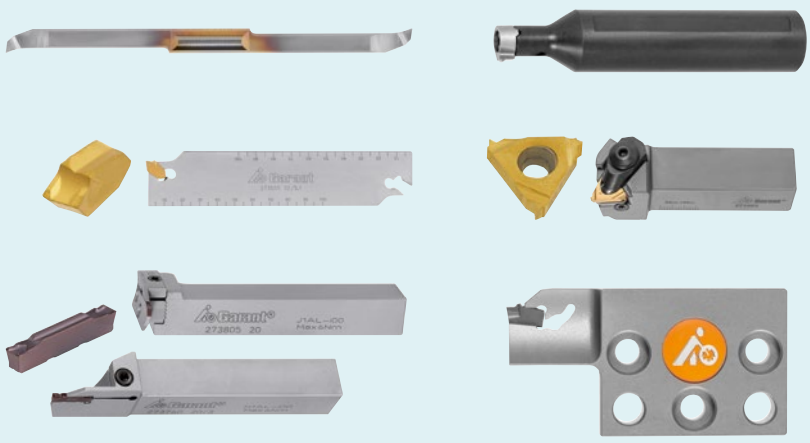
25 624 – 664



Garant KYOCERA KENNAMETAL SWISSTOOLS KOMET HOLEX

Positive rake inserts (carbide, CBN, MCD, PCD), screw-on toolholders, boring bars, interchangeable cutting heads, precision turning range, turning and drilling tools

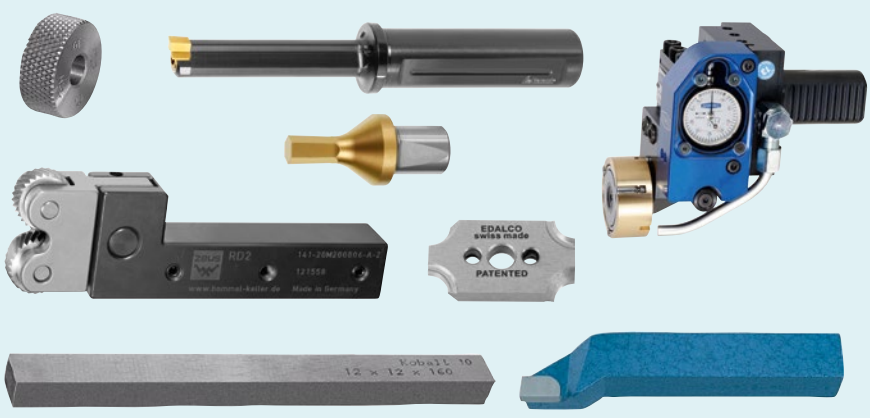
26 665 – 715



Garant HOLEX

Mini turning tools, micro precision turning tools, thread turning tools, groove turning tools for retaining rings, parting off and grooving tools, axial face grooving tools

27 716 – 756



Garant ZEUS ECOROLL duMONT KOMET HOLEX

Knurling tools, smooth rolling tools, labelling tools, keyway broaching tools and profile slotting tools, broaches, slotting tools, radial turning tools, turning tool blanks, turning tools

29 757 – 785

Overview – ISO indexable milling inserts

Shape	Clearance angle	ISO	Insert size	Cermet carbide	CBN	Ceramic	MCD	PCD	Suitable tool holders	Suitable boring bars
				Page						
C.. Rhombus 80°	CN.. 0°	CNGA	09/12	–	661 – 662	663	–	–	630 – 632	633
		CNGG	09/12	635	–	–	–	–	630 – 632	633
		CNMA	12	635	662	–	–	–	630 – 632	633
		CNMG	09/12/16/19	634 – 637	–	–	–	–	630 – 632	633
		CNMM	12/16/19	637 – 638	–	–	–	–	630 – 632	633
	CC.. 7°	CCGT	03/06/09/12	669 – 672	–	–	–	708	665 – 666	666 – 668
		CCGW	06/09/12	–	703	–	707	708	665 – 666	666 – 668
		CCMT	06/09/12	669 – 672	–	–	–	–	665 – 666	666 – 668
		CCMW	06/09	–	704 – 705	–	–	–	665 – 666	666 – 668
	CD.. 15°	CDCT	S4	709	–	–	–	–	–	709
D.. Rhombus 55°	DN.. 0°	DNGA	11/15	–	661 – 662	663	–	–	638 – 640	640
		DNGG	11	642	–	–	–	–	638 – 640	640
		DNMA	15	–	662	–	–	–	638 – 640	640
		DNMG	11/15/19	641 – 643	–	–	–	–	638 – 640	640
	DC.. 7°	DCGT	04/07/11	678 – 680	–	–	–	708	673 – 674	675 – 678
		DCGW	07/11	–	703	–	707	708	673 – 674	675 – 678
		DCGX	07/11	679	–	–	–	–	673 – 674	675 – 678
		DCMT	07/11	678 – 680	–	–	–	–	673 – 674	675 – 678
		DCMW	07/11	–	704 – 705	–	–	–	673 – 674	675 – 678
G.. Rhombus 45°	GC.. 7°	GCCT	06	710	–	–	–	–	–	710
	GP.. 11°	GPCT	S5	710	–	–	–	–	–	710
K.. Rhomboid 55°	KN.. 0°	KNUX	16	644	–	–	–	–	644	644
R.. Round	RN.. 0°	RNGN	12	–	–	664	–	–	644	–
		RCGT	06/08	681	–	–	–	–	681	–
	RC.. 7°	RCGX	10/12	681	–	–	–	–	681	–
		RCMT	06/08	681	–	–	–	–	681	–
		RCMX	10/12	681	–	–	–	–	–	–
S.. Square 90°	SN.. 0°	SNGA	12	–	–	663	–	–	645 – 646	–
		SNMA	12	647	–	–	–	–	645 – 646	–
		SNMG	12/15/19	646 – 648	–	–	–	–	645 – 646	–
		SNMM	12/15/19	648	–	–	–	–	645 – 646	–
	SC.. 7°	SCGT	09/12	683	–	–	–	–	682	683
		SCMT	09/12	683 – 684	–	–	–	–	682	683
T.. Trigon 60°	TN.. 0°	TNGA	16	–	661 – 662	663	–	–	649	649
		TNMA	16	651	662	–	–	–	649	649
		TNGG	16	651	–	–	–	–	649	649
		TNMG	16/22	650 – 651	–	–	–	–	649	649
	TC.. 7°	TCGT	11/16	686	–	–	–	–	684	684 – 685
		TCGW	11/16	–	703	–	–	–	684	684 – 685
		TCMT	11/16	686	–	–	–	–	684	684 – 685
	TD.. 15°	TDAT	07	711	–	–	–	–	–	711
V.. Rhombus 35°	VN.. 0°	VNGA	16	–	661 – 662	663	–	–	652	653
		VNGG	16	654	–	–	–	–	652	653
		VNMA	16	–	662	–	–	–	652	653
		VNMG	16	653 – 654	–	–	–	–	652	653
	VB.. 5°	VBGT	11/16	685 – 690	–	–	–	–	687 – 688	688 – 689
		VBGW	11/16	–	703 – 704	–	707	–	687 – 688	688 – 689
		VBMT	11/16	685 – 690	–	–	–	–	687 – 688	688 – 689
		VBMW	11/16	–	705	–	–	–	687 – 689	688 – 689
	VC.. 7°	VCGT	05/07/11/16	697 – 698	–	–	–	708	691 – 692	693 – 697
		VCGW	11/16	–	703	–	707	708	691 – 692	693 – 697
		VCGX	11	697	–	–	–	–	691 – 692	693 – 697
		VCMT	11/16	697 – 698	–	–	–	–	691 – 692	693 – 697
		VCMW	11/16	–	705	–	–	–	691 – 692	693 – 697
W.. Trigon 80°	WN.. 0°	WNGA	06/08	–	661 – 662	–	–	–	655 – 656	657
		WNGG	06/08	658	–	–	–	–	655 – 656	657
		WNMA	08	658	–	–	–	–	655 – 656	657
		WNMG	06/08	657 – 659	–	–	–	–	655 – 656	657
	WC.. 7°	WCHX	04 – 17	713	–	–	–	–	–	713

Garant HOLEX Turning type key

HB 7010-1

H	B	7	0	10	–	1
Technology	Coating	Classification	Application range of materials	Application conditions		Version

Technology		Coating		Classification		Application range of materials		Application conditions
H	Carbide	B	Coated	7	GARANT	..	UNI	05
C	Cermet	U	Uncoated	8	GARANT	0	P	10
K	Ceramic			9	GARANT	1	M	15
B	CBN			c	GARANT	2	K / H	20
P	PCD			X	HOLEX	3	N	25
M	MCD			T	HOLEX	4	S	35
								40

Garant Turning type key

	Garant Grade description	P (steel)					M (Inox)				K GG(G)				N (Alu)		S (Ti)		H (HRC)		
		P01	P10	P20	P30	P40	M10	M20	M30	M40	K01	K10	K20	K30	(Alu)	(Alu)	(Ti)	(Ti)	< 55	< 60	< 67
Cermet	Precision finishing and finishing of steel, stainless steel and cast iron. Uncoated.	CU7010					CU7010				CU7010										
	For medium machining of steel, stainless steel and cast iron. TiAlN / TiN multi-layer coating.		CB7010				CB7010				CB7010										
Carbide	General-purpose tool material type with PVD coating.			HB725				HB725					HB725		HB725		HB725				
	General-purpose tool material grade. Low cobalt content. Nano-PVD coating.			HB730-1				HB730-1					HB730-1		HB730-1		HB730-1				
	Very good heat resistance and wear resistance. With an extremely smooth surface for very high performance. TiCN / Al_2O_3 CVD coating.	HB7010-1																			
	Grade with an extremely smooth surface for optimum chip evacuation and very high wear resistance. TiCN / Al_2O_3 CVD coating.		HB7020																		
	Multi-grade for steel and easily machined stainless steel at medium cutting speed.			HB7025-1																	
	High edge toughness and wear resistance. TiCN / Al_2O_3 CVD coating.				HB7035-1																
	Optimised heat resistance for high productivity. CVD-PT coating.						HB7120-1														
	Grade for stainless steel at medium to high cutting speeds.							HB7125-1													
	Outstanding wear resistance and edge toughness. CVD-PT coating.								HB7140-1												
	First choice for cast iron. For continuous and interrupted cutting. TiCN / Al_2O_3 CVD coating.										HB7210-1										
	Specially for aluminium machining. Outstanding wear resistance and cutting edge stability. Uncoated.														HU7305 HU7310						
	Ideal for materials with a high silicon content. TiAlN-coated for higher wear resistance.														HB7310						
	Especially for long-chipping materials such as aluminium or copper. Uncoated.														HU7310-1						
	Outstanding wear resistance at low cutting speeds. Uncoated.														HU7315-1						
PCD	Polycrystalline diamond, fine grain, particle size 5 µm. Very good cutting edge sharpness, wear resistance and toughness.														PCD						
MCD	Monocrystalline diamond. Extremely sharp cutting edges and contour accuracy. Low tendency to brittle fracture.														MCD						
Carbide	Wear-resistant grade for titanium, titanium alloys and non-ferrous metals.														HB7410-1		HB7410-1				
	Suitable for heat resistant alloys. TiAlN / AlCrN multi-layer coating.																HB7415				
CBN	Broadband CBN grade for universal use on hardened steels.																			BU7220	
Ceramic	Uncoated aluminium oxide silicon carbide whisker ceramic. For roughing and finishing exotic materials such as Inconel, Stellite.																KU7410				
	Machining of hard materials up to 68 HRC and grey cast iron. Coated aluminium oxide - titanium carbide ceramic.										KB7205										KB7205

Garant Tool materials for special turning / grooving systems

	Grade description	P (steel) P01	P10	P20	P30	P40	M (Inox) M10	M20	M30	M40	K GG(G) K01	K10	K20	K30	N (Alu) (Alu)	(Alu)	S (Ti) (Ti)	(Ti)	H (HRC) < 55	< 60	< 67
4 in 1	Universal grade. First choice for low-alloy steel. PVD coating.	HBZ025	HBZ035																		
	CVD coating with 10 % Co. Specially for external and internal machining.		HBZ030																		
	Especially for machining aluminium. Outstanding wear resistance and cutting edge stability. Uncoated.														HUZ310						
	Specially for machining aluminium and materials with a high silicon content. Extended wear resistance and cutting edge stability thanks to 3 µm PVD coating.														HBZ310						
	Fine grain grade. Optimum for stainless steel. PVD coating.						HBZ120														
	Tough medium-grain substrate. First choice for drilling and turning applications in stainless steel. Thin PVD coating.								HBZ140												
Precision turning	First choice grade for machining steel. TiN / Al_2O_3 / TiCN multi-layer coating.			HB7035																	
	Grade for stainless steel at medium to high cutting speeds.						HB7125-1														
	Especially for machining aluminium. Outstanding wear resistance and cutting edge stability. Uncoated.														HU7310						
	Micrograin grade for titanium/nickel-based alloys. Slightly honed cutting edges, very tough. TiN / PVD multi-layer coating.																HB7410				
Mini	Universal grade. TiAlN / PVD multi-layer coating.			HB720			HB720					HB720									
Threads	For use for continuous cutting. TiAlN / Al_2O_3 / TiCN, multi-layer coating.		HB7010				HB7010					HB7010									
	Wear-resistant grade with very high toughness.			HB7020			HB7020					HB7020			HB7020		HB7020				
	Special grade for turning threads in stainless steel. TiAlN / PVD multi-layer coating.						HB7125														
	Mirror finish polished for good chip evacuation. Grade for high quality surfaces in aluminium. Uncoated.														HB7020						
Grooving / parting off	Specially for grooving steel. Good cutting edge stability. Uncoated.		CU7025																		
	High profile accuracy and surface quality due to high cutting edge stability. Uncoated.		CU7033																		
	Extremely wear-resistant grade for grooving. Multi-layer PVD coating.		HB7010				HB7010				HB7010						HB7010				
	Universal grade. TiAlN / PVD multi-layer coating.			HB7020			HB7020					HB7020					HB7020				
	Machining of steel and cast materials. TiN / Al_2O_3 / TiCN multi-layer coating.		HB7035									HB7035									
	Very tough general-purpose grade. With only slight honing of cutting edges. First choice for stainless steel. TiN / TiCN coating, smoothed.							HB7130									HB7130				
	For stainless steel, high toughness. TiN / PVD multi-layer coating.								HB7135								HB7135				
	CVD coating, for use on steel materials and cast iron. Al_2O_3 / TiCN / TiN.			HB7215									HB7215								
	Especially for machining aluminium. Ground clamping trough. Outstanding wear resistance and cutting edge stability. Uncoated.														HU7310						
Triangular grooving	Grade for grooving steel. Good cutting edge stability. Uncoated.		CU7025																		
	Extremely wear-resistant grade for grooving. Multi-layer PVD coating.		HB7010				HB7010				HB7010						HB7010				
	Universal grade. TiAlN / PVD multi-layer coating.			HB7020			HB7020					HB7020					HB7020				
	CVD coating, for use on steel materials and cast iron. Al_2O_3 / TiCN / TiN.			HB7215									HB7215								
	Especially for machining aluminium. Outstanding wear resistance and cutting edge stability. Uncoated.														HU7310						
	For aluminium, non-ferrous metals and cast aluminium > 10 % Si. CVD diamond multi-layer coating.														HB7310						
	Polycrystalline diamond, fine grain. Very good cutter sharpness, wear resistance and toughness. For general machining of non-ferrous metals and non-ferrous materials with low abrasive fillers.														PCD						
	Wear-resistant grade with very high toughness.																		CBN825		
Triangular grooving	Tough micrograin carbide. Stable machining of non-ferrous metals and non-metals. Uncoated.														HU7310		HU7310				
	Nano multi-layer coating for high wear resistance. Stable and longer tool life in steel and stainless steel.			HB7020			HB7020														

KENNAMETAL KYOCERA HOLEX Tool materials for turning

KENNAMETAL

	Grade description	P (steel) P01	P10	P20	P30	P40	M (Inox) M10	M20	M30	M40	K GG(G) K01	K10	K20	K30	N (Alu) (Alu)	(Alu)	S (Ti) (Ti)	(Ti)	H (HRC) < 55	< 60	< 67
	For finish machining, even under unstable conditions. TiAlN nano-coating (PVD).	SP4019					SP4019					SP4019					SP4019				
	Combination of micro-grain and an exceptionally hard surface. Suitable for abrasive materials. TiAlN nano-coating (PVD).	SP0819					SP0819										SP0819				

KYOCERA

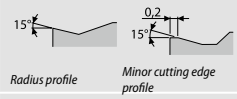
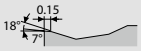
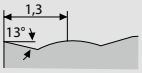
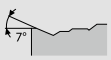
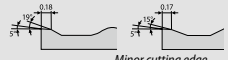
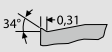
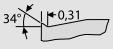
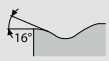
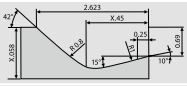
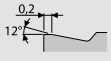
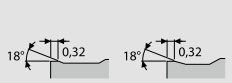
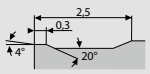
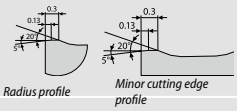
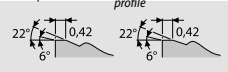
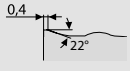
Cermet	Megacoat (PVD) coating on a micrograin substrate. For general machining of steel and stainless steel.	PV720					PV720														
Carbide coated	The best wear resistance due to its micro-crystalline multi-layer coating – TiCN + Al_2O_3 + TiN (CVD). High-speed machining of steel.	CA510																			
	Tough substrate for universal application. TiCN + Al_2O_3 + TiN (CVD).		CA515																		
	First choice for machining steel. Extra-thick aluminium oxide coating (CVD) with outstanding resistance to brittle fracture and to galling.		CA025P																		
	Tough grade for general machining of stainless steel. TiCN + Al_2O_3 +TiN (CVD).							CA6525													
	Megacoat (PVD) coating on a micrograin carbide substrate. Machining of carbon steel and stainless steel. For slightly interrupted to interrupted cutting.		PR1225				PR1225														
	Megacoat (PVD) coating on a micrograin substrate. For general machining of steel and stainless steel.		PR1425					PR1425													
	For heat-resistant nickel alloys, titanium alloys and precipitation-hardened steels. Megacoat nano multi-layer coating.							PR1535									PR1535				
	First choice for turning cast iron; from slightly to heavily interrupted cut. TiCN + Al_2O_3 (CVD).											CA4515									
	Diamond-coated grade for long tool life on non-ferrous metals. Low tendency to edge build-up for high surface quality and long tool life.														PDL025						
	Machining of non-ferrous metals and non-metals. Tungsten carbide cobalt. Tough micrograin carbide.														KW10						
	Wear-resistant grade for high-speed machining. Low edge wear and low risk of brittle fracture. Megacoat hard coating.																PR005S				
	For general machining with excellent wear characteristics and stability. Megacoat hard coating.																PR015S				
	Excellent wear resistance when machining titanium alloys.																SW05				
CBN	Extremely heat-resistant CBN substrate. Specially for finishing operations in hardened steel at high cutting speeds. Megacoat coating.																		KBN05M		
	Micrograin CBN in conjunction with highly heat-resistant Megacoat coating.																		KBN25M		
	Combination of a tough CBN shell around a wear-resistant hard CBN core. Can be used for interrupted cutting. Megacoat coating.																		KBN35M		
Ceramic	For medium roughing to finish machining of cast iron and hardened steel. Megacoat coating.										PT600M								PT600M		

HOLEX

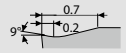
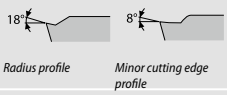
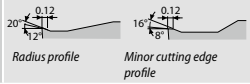
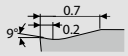
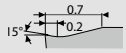
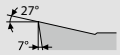
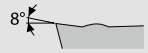
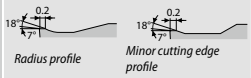
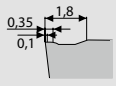
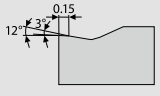
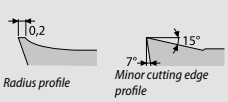
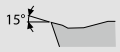
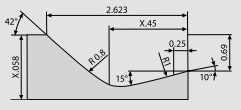
Carbide	HOLEX P25/M25 range for general machining of steel and stainless steel. Uncoated.		HUT25					HUT25													
	HOLEX P20 grade for general-purpose machining of steel. Can be used for interrupted cutting. TiCN / Al_2O_3 / TiN-CVD coating.		HBT020																		
	HOLEX M30 grade for general machining of stainless steel. Can be used for interrupted cutting. TiCN / Al_2O_3 / TiN-CVD coating.								HBT130												
CBN	Wear-resistant CBN with high toughness for a wide range of applications.																		BUX220		

ISO turning – Overview of chip breaker selection

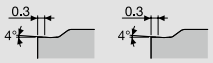
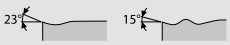
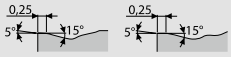
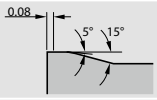
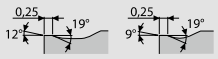
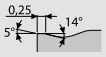
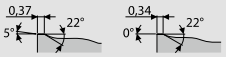
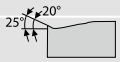
Negative rake inserts

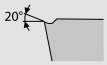
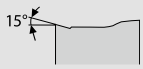
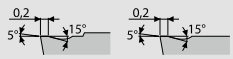
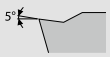
Application	Chip breaker	Geometry	Characteristics
Carbide			
Finishing	SS		Specially for light machining of general and alloy steels. Suitable for high feed rates at low cutting depths.
	WSS		**Wiper**–Geometry for finish machining of general and alloy steels. Better surface quality or higher feed rates at same surface quality.
	VS		Light to medium machining of stainless steels. Also for difficult to machine materials. Sharp cutting edges for a soft cutting action.
	TIS		Finish machining of difficult to machine materials such as nickel-based alloys or titanium.
Medium machining	SM		Medium machining of general and alloy steel grades together with light machining of castings. Positive primary chamfer for a for smooth cutting.
	WSM		**Wiper**–Geometry for medium machining of general and alloy steels. Better surface quality or higher feed rates at same surface quality.
	VM		Distinctive chip evacuation geometry coupled with slightly positive cutting angle give the best chip evacuation. Main application in stainless steels.
	GM		High cutting edge stability for a wide range of applications in cast materials.
	AM		For finishing to medium roughing of aluminium. Extremely positive chip-breaker geometry.
	TAM		For light and medium machining of titanium and aluminium > 16 % Si. Extremely positive geometry.
	TIM		Light and medium machining of heat-resistant alloys. Positive cutting angle and large chip breaking hollow permit focus on chip clearance.
	UM		Chip breakers for medium machining. For general use over a wide range of materials.
	XUM		Open and positive chip breaker for soft cutting and optimum chip formation.
Roughing	SM, VM spec. KNUX		Machining of carbon steel and alloy steels.
	SG		Roughing operations on general and alloy steels. Large flute combined with a wide flat primary chamfer for high feed rates. Also suitable for interrupted machining.
	VG		For rough machining of stainless, steels. Sturdy cutting edge version.
	Cast iron		Stable cutting edge and wide protective chamfer for medium rough machining of castings.
	SR		Rough machining of low-tensile steels. The positive primary chamfer and curved cutting edge reduce the cutting resistance.
	VR		Sturdy, easy-cutting geometry for single-sided inserts. For heavy roughing machining of stainless steels.

Positive rake inserts

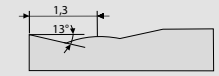
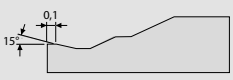
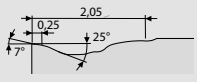
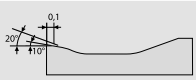
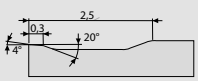
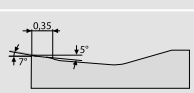
Application	Chip breaker	Geometry	Characteristics
Carbide			
Finishing	SF		For precision finishing in steels. Positive rake geometry for soft cutting.
	SS		Finishing operations on general, alloy and stainless steels. Smooth cut due to sharp cutting edge profile.
	WSS		**Wiper**–Geometry for finish machining of steels and stainless steels. Better surface quality or higher feed rates at same surface quality.
	VF		For precision finishing in stainless steels. Positively designed geometry for soft cutting.
	VS		For light and medium operations in stainless steels. Heavily profiled surface for unobstructed swarf evacuation. Sharp cutting edge.
	AF		Positive rake geometry specially for non-ferrous metals and plastics.
	TAS		For light machining of titanium and aluminium > 16% Si. Positively designed geometry.
	TIS		Exceptionally well suited for use on high temperature materials.
Medium machining	SM		First choice for medium machining of carbon steel, alloy and stainless steels. Combination of sharp cutting edges and stability.
	WSM		**Wiper**–Geometry for medium machining of steels and stainless steels. Better surface quality or higher feed rates at same surface quality.
	VM		For medium and rough machining of stainless steels. Strong cutting edges and positive rake angle.
	GM		High cutting edge stability for a wide range of applications in cast materials.
	AM		Aluminium machining. Large rake angle and special surface geometry permit excellent chip clearance and low cutting forces.
	UM		Chip breakers for use in a wide range of materials. For medium machining.
	XUM		Open and positive chip breaker for soft cutting and optimum chip formation.

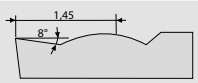
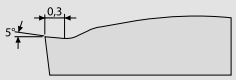
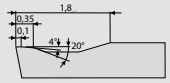
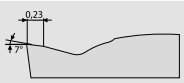
KYOCERA

Negative rake inserts – Carbide			
Finishing	WP		Finishing with wiper geometry. For twice the feed rate without compromising the surface quality.
	WQ		Wiper geometry for finishing cuts and medium machining. For twice the feed rate without compromising the surface quality.
	PQ		Finishing up to light cutting depths. Good chip evacuation.
	MQ		Large rake, round cutting edge. Low cutting force and good chip clearance.
Finishing – medium machining	HQ		Wide chip breaker area due to 3D rake angle and double overhang geometry.
Medium machining - roughing	PS		Extremely stable due to large contact area.
	PG		Chip breaker with stable edges for general machining.
	MS		First-class sharp cutting edges due to positive rake geometry. Particularly sturdy cutting edges.
	STD		Standard chip breaker for smooth to slightly interrupted cutting of cast iron.
	AH		Polished chip breaker. Very good chip clearance and low tendency to edge build-up.
	MU		Large rake angle reduces the cutting forces. Lower burr formation due to reduced damage due to formation of notches.
Roughing	PH		For roughing steels. Suitable for heavily interrupted cutting and workpieces with casting skin.
	PX		Roughing at high feed rates. Chip breaker requires only low cutting force.
	SX		Highly efficient roughing thanks to the unique cutting edge design. Shim necessary!

Positive rake inserts – Carbide			
Finishing	MP-CF		Suitable for small depths of cut (0.02 – 0.2 mm).
	MFP-GF		The chip breaker extends right up to the cutting edge. Sharp cutting edge. Polished insert surface.
	MFP-PF		Sharp cutting edge for finish machining of materials that are difficult to machine.
	MFP-SK		Chip breakers for very low cutting forces Optimised chip breaking for materials steel and stainless steel.
	HQ		Chip breaker for medium machining.
	MQ		Good chip evacuation when used for internal boring. Small tightly curled chips prevent them sticking in the toolholder. Constant surface accuracy.
Finishing - medium machining	GK		Good chip clearance due to chip breaker and chip diverter.
	MFP-GQ		Cutters with different cutting conditions due to the use of the optimum chip breaker width for the respective cutting depth. Polished surface.
	AH		Sharp cut and good chip control wit lower cutting force. Low tendency to galling, thanks to polished rake faces.

HOLEX

Negative rake inserts – Carbide			
Finishing	PF		Soft-cutting geometry for finish machining of steels and stainless steels.
	MF		
Medium machining	PM		Reliable chip clearance for medium machining of steels and stainless steels.
	MM		
Roughing	PR		Stable cutting edge version for roughing machining of steels and stainless steels.
	MR		

Positive rake inserts – Carbide			
Finishing	PF		Soft-cutting geometry for finish machining of steels and stainless steels.
	MF		
Medium machining	PM		Reliable chip clearance for medium machining of steels and stainless steels.
	MM		

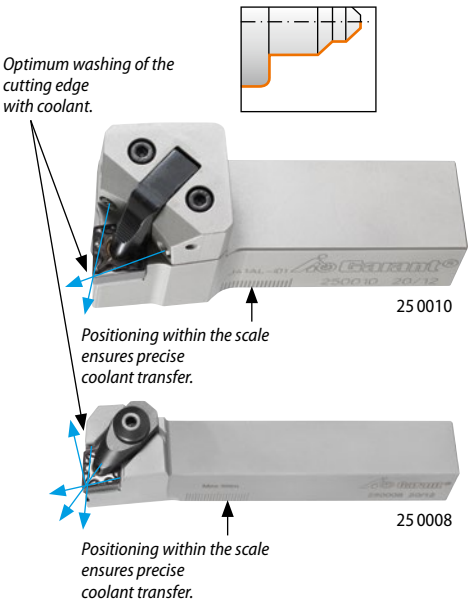
DIN ISO 5610

.CLN 95° eco QT clamping / lever lock toolholder for indexable inserts CN..

With internal coolant feed right to the cutting edge. Cooling by means of precision nozzles effectively and efficiently reduces the thermal loading, since the coolant stream is optimally directed between the chip and cutting edge. This results in higher productivity, longer tool life and higher process reliability.

25 0010/0011 – **Combine the advantages of Garant eco and tool-less insert changing. Release the stop at the push of a button – change the insert – press the clamp to secure it.**
A simple and convenient way to reduce non-productive times.

Note: Coolant transfer only in conjunction with GARANT eco-system toolholders No. 317900 – 319886.



Shank / insert size	21U 25 0010	21U 25 0011	ISO code toolholder	suitable indexable insert				Shim	Shim screw	Clamp
	eco QT clamping toolholder									
mm	right-hand	left-hand			mm	mm	mm			
20/12	XXX	XXX	DCLNR/L 2025X12	CN.. 1204..	32	32	91	259031 11	259025 1	259038 7
25/12	XXX	XXX	DCLNR/L 2525X12	CN.. 1204..	32	32	103.5	259031 11	259025 1	259038 7

Shank size / insert size	21U 25 0004	21U 25 0005	ISO code toolholder	suitable indexable insert				Shim	Shim screw	Clamp, screw, spring	
	eco clamping toolholder, short										
mm	right-hand	left-hand			mm	mm	mm			25 0004	25 0005
16/09	XXX	XXX	DCLNR/L 1616X09	CN.. 09T3..	23	27	74	259033 7	259027 5	259036 12	259036 13
20/12	XXX	XXX	DCLNR/L 2020X12	CN.. 1204..	26	29	88	259033 2	259027 2	259036 8	259036 8
25/12	XXX	XXX	DCLNR/L 2525X12	CN.. 1204..	32	34	104.5	259033 2	259027 2	259036 8	259036 8

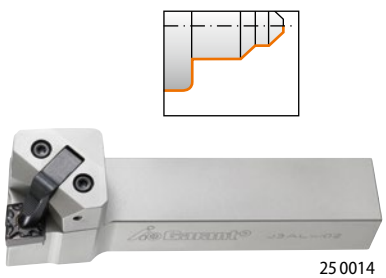
Shank / insert size	21U 25 0008	21U 25 0009	ISO code toolholder	suitable indexable insert				Shim	Shim screw	Clamp, screw, spring	
	eco clamping toolholder										
mm	right-hand	left-hand			mm	mm	mm			25 0008	25 0009
16/09	XXX	XXX	DCLNR/L 1616H09	CN.. 09T3..	23	27	100	259033 7	259027 5	259036 12	259036 13
20/12	XXX	XXX	DCLNR/L 2020K12	CN.. 1204..	26	29	125	259033 2	259027 2	259036 8	259036 8
25/12	XXX	XXX	DCLNR/L 2525M12	CN.. 1204..	32	34	150	259033 2	259027 2	259036 8	259036 8

Shank / insert size	21U 25 0012	21U 25 0013	ISO code toolholder	suitable indexable insert				Shim	Lever	Lever screw	Spring
	eco lever lock toolholder, short										
mm	right-hand	left-hand			mm	mm	mm				
16/12	XXX	XXX	PCLNR/L 1620X12	CN.. 1204..	25	34	81	259031 11	259015 3	259018 3	259046 1
20/12	XXX	XXX	PCLNR/L 2020X12	CN.. 1204..	25	34	93	259031 11	259015 3	259018 3	259046 1
25/12	XXX	XXX	PCLNR/L 2525X12	CN.. 1204..	32	34	105.5	259031 11	259015 3	259018 3	259046 1

DIN ISO 5610

DCLN 95° QuickTurn clamping toolholder for indexable inserts CN..

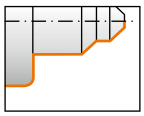
Application: Inserts can be changed without using tools.
Release the stop at the push of a button – change the insert – press the clamp to secure it.
A simple and convenient way to reduce ancillary times.


25 0014

Shank / insert size	21U 25 0014	21U 25 0015	ISO code toolholder	suitable indexable insert				Shim	Shim screw	Clamp
	QuickTurn clamping toolholder									
mm	right-hand	left-hand			mm	mm	mm			
20/12	XXX	XXX	DCLNR/L 2025K12	CN.. 1204..	32	32	125	259031 3	259025 4	259038 7
25/12	XXX	XXX	DCLNR/L 2525M12	CN.. 1204..	32	32	150	259031 3	259025 4	259038 7

DIN ISO 5610

DCLN 95° clamp toolholder for indexable inserts CN..

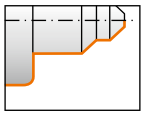


25 0016

Shank / insert size	21T 25 0016	21T 25 0017	ISO code toolholder	suitable indexable insert				Shim	Shim screw	Clamp, screw, spring
	Clamp toolholder									
mm	right-hand	left-hand			mm	mm	mm			
20/12	XXX	XXX	DCLNR/L 2020K12	CN.. 1204..	25	30	125	259031 2	259025 10	259035 2
25/12	XXX	XXX	DCLNR/L 2525M12	CN.. 1204..	32	33	150	259031 2	259025 10	259035 2
32/12	XXX	XXX	DCLNR/L 3232P12	CN.. 1204..	40	34	170	259031 2	259025 10	259035 2
25/16	XXX	XXX	DCLNR/L 2525M16	CN.. 1606..	32	36	150	259031 35	259025 11	259035 6
32/16	XXX	XXX	DCLNR/L 3232P16	CN.. 1606..	40	40	170	259031 35	259025 11	259035 6
32/19	XXX	XXX	DCLNR/L 3232P19	CN.. 1906..	40	40	170	259031 36	259026 2	259038 15
40/19	XXX	XXX	DCLNR/L 4040S19	CN.. 1906..	50	45	250	259031 18	259026 1	259035 1

DIN ISO 5610

MCLN 95° clamp toolholder for indexable inserts CN..

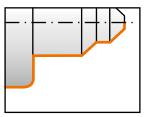


25 0006

Shank / insert size	21T 25 0006	21T 25 0007	ISO code toolholder	suitable indexable insert				Shim	Shim screw	Clamping claw	Screw for clamping claw
	Clamp toolholder										
mm	right-hand	left-hand			mm	mm	mm				
20/12	XXX	XXX	MCLNR/L 2020K12	CN.. 1204..	25	28	125	259031 22	259025 6	259038 4	259021 1
25/12	XXX	XXX	MCLNR/L 2525M12	CN.. 1204..	32	33	150	259031 22	259025 6	259038 4	259021 1
32/12	XXX	XXX	MCLNR/L 3232P12	CN.. 1204..	40	34	170	259031 22	259025 6	259038 4	259021 1
25/16	XXX	XXX	MCLNR/L 2525M16	CN.. 1606..	32	33	150	259031 23	259025 7	259038 4	259021 1
32/16	XXX	XXX	MCLNR/L 3232P16	CN.. 1606..	40	34	170	259031 23	259025 7	259038 4	259021 1
32/19	XXX	XXX	MCLNR/L 3232P19	CN.. 1906..	40	40	170	259031 24	259025 8	259038 5	259021 5

DIN ISO 5610

PCLN 95° lever lock toolholder for indexable inserts CN..

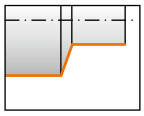


25 0018

Shank / insert size	21T 25 0018	21T 25 0019	ISO code toolholder	suitable indexable insert				Shim	Lever	Lever screw	Shim pins pack	Shim punches pack
	Lever lock toolholder											
mm	right-hand	left-hand			mm	mm	mm					
16/09	XXX	XXX	PCLNR/L 1616H09	CN.. 09T3..	20	25	100	259031 27	259015 9	259018 6	259044 5	259047 3
20/09	XXX	XXX	PCLNR/L 2020K09	CN.. 09T3..	25	28	125	259031 27	259015 9	259018 6	259044 5	259047 3
25/09	XXX	XXX	PCLNR/L 2525M09	CN.. 09T3..	32	33	150	259031 27	259015 9	259018 6	259044 5	259047 3
16/12	XXX	XXX	PCLNR/L 1616H12	CN.. 1204..	20	25	100	259031 2	259015 2	259018 8	259044 2	259047 2
20/12	XXX	XXX	PCLNR/L 2020K12	CN.. 1204..	25	28	125	259031 2	259015 2	259018 2	259044 2	259047 2
25/12	XXX	XXX	PCLNR/L 2525M12	CN.. 1204..	32	33	150	259031 2	259015 2	259018 2	259044 2	259047 2
32/12	XXX	XXX	PCLNR/L 3232P12	CN.. 1204..	40	30	170	259031 2	259015 2	259018 2	259044 2	259047 2
25/16	XXX	XXX	PCLNR/L 2525M16	CN.. 1606..	32	33	150	259031 35	259015 12	259018 11	259044 6	259047 4
32/16	XXX	XXX	PCLNR/L 3232P16	CN.. 1606..	40	40	170	259031 35	259015 12	259018 11	259044 6	259047 4
32/19	XXX	XXX	PCLNR/L 3232P19	CN.. 1906..	40	40	170	259031 36	259015 13	259018 13	259044 7	259047 5
40/19	XXX	XXX	PCLNR/L 4040S19	CN.. 1906..	50	45	250	259031 17	259015 1	259018 1	259044 1	259047 1

DIN ISO 5610

PCBN 75° lever lock toolholder for indexable inserts CN..

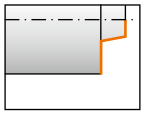


25 0020

Shank / insert size	25 0020	25 0021	ISO code toolholder	suitable indexable insert				Shim	Lever	Lever screw	Shim pins pack	Shim punches pack
	Lever lock toolholder											
mm	right-hand	left-hand			mm	mm	mm					
16/09	XXX	XXX	PCBNR/L 1616H09	CN.. 09T3..	16	20	100	259031 27	259015 9	259018 6	259044 5	259047 3
20/09	XXX	XXX	PCBNR/L 2020K09	CN.. 09T3..	20	21	125	259031 27	259015 9	259018 6	259044 5	259047 3
25/09	XXX	XXX	PCBNR/L 2525M09	CN.. 09T3..	25	21	150	259031 27	259015 9	259018 6	259044 5	259047 3
20/12	XXX	XXX	PCBNR/L 2020K12	CN.. 1204..	25	28	125	259031 2	259015 2	259018 2	259044 2	259047 2
25/12	XXX	XXX	PCBNR/L 2525M12	CN.. 1204..	32	33	150	259031 2	259015 2	259018 2	259044 2	259047 2
25/16	XXX	XXX	PCBNR/L 2525M16	CN.. 1606..	22	29	150	259031 35	259015 12	259018 11	259044 6	259047 4
32/16	XXX	XXX	PCBNR/L 3232P16	CN.. 1606..	27	35	170	259031 35	259015 12	259018 11	259044 6	259047 4
32/19	XXX	XXX	PCBNR/L 3232P19	CN.. 1906..	27	35	170	259031 36	259015 13	259018 13	259044 7	259047 5
40/19	XXX	XXX	PCBNR/L 4040S19	CN.. 1906..	35	48	250	259031 17	259015 1	259018 1	259044 1	259047 1

DIN ISO 5610

PCKN 75° lever lock toolholder for indexable inserts CN..

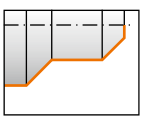


25 0022

Shank / insert size	25 0022	25 0023	ISO code toolholder	suitable indexable insert				Shim	Lever	Lever screw	Shim pins pack	Shim punches pack
	Lever lock toolholder											
mm	right-hand	left-hand			mm	mm	mm					
16/09	XXX	XXX	PCKNR/L 1616H09	CN.. 09T3..	20	22	100	259031 27	259015 9	259018 6	259044 5	259047 3
20/09	XXX	XXX	PCKNR/L 2020K09	CN.. 09T3..	25	20	125	259031 27	259015 9	259018 6	259044 5	259047 3
25/09	XXX	XXX	PCKNR/L 2525M09	CN.. 09T3..	32	25	150	259031 27	259015 9	259018 6	259044 5	259047 3
20/12	XXX	XXX	PCKNR/L 2020K12	CN.. 1204..	25	28	125	259031 2	259015 2	259018 2	259044 2	259047 2
25/12	XXX	XXX	PCKNR/L 2525M12	CN.. 1204..	32	33	150	259031 2	259015 2	259018 2	259044 2	259047 2
25/16	XXX	XXX	PCKNR/L 2525M16	CN.. 1606..	32	30	150	259031 35	259015 12	259018 11	259044 6	259047 4
32/16	XXX	XXX	PCKNR/L 3232P16	CN.. 1606..	40	34	170	259031 35	259015 12	259018 11	259044 6	259047 4
32/19	XXX	XXX	PCKNR/L 3232P19	CN.. 1906..	40	40	170	259031 36	259015 13	259018 13	259044 7	259047 5
40/19	XXX	XXX	PCKNR/L 4040S19	CN.. 1906..	50	45	250	259031 17	259015 1	259018 1	259044 1	259047 1

DIN ISO 5610

PCSN 45° lever lock toolholder for indexable inserts CN..

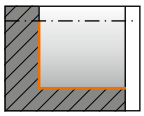


25 0024

Shank / insert size	25 0024	25 0025	ISO code toolholder	suitable indexable insert				Shim	Lever	Lever screw	Shim pins pack	Shim punches pack
	Lever lock toolholder											
mm	right-hand	left-hand			mm	mm	mm					
16/09	XXX	XXX	PCSNR/L 1616H09	CN.. 09T3..	20	22	100	259031 27	259015 9	259018 6	259044 5	259047 3
20/09	XXX	XXX	PCSNR/L 2020K09	CN.. 09T3..	25	26	125	259031 27	259015 9	259018 6	259044 5	259047 3
25/09	XXX	XXX	PCSNR/L 2525M09	CN.. 09T3..	32	25	150	259031 27	259015 9	259018 6	259044 5	259047 3
20/12	XXX	XXX	PCSNR/L 2020K12	CN.. 1204..	25	28	125	259031 2	259015 2	259018 2	259044 2	259047 2
25/12	XXX	XXX	PCSNR/L 2525M12	CN.. 1204..	32	33	150	259031 2	259015 2	259018 2	259044 2	259047 2
25/16	XXX	XXX	PCSNR/L 2525M16	CN.. 1606..	32	33	150	259031 35	259015 12	259018 11	259044 6	259047 4
32/16	XXX	XXX	PCSNR/L 3232P16	CN.. 1606..	40	34	170	259031 35	259015 12	259018 11	259044 6	259047 4
32/19	XXX	XXX	PCSNR/L 3232P19	CN.. 1906..	40	40	170	259031 36	259015 13	259018 13	259044 7	259047 5

3×D | DIN 8024

A.. DCLN 95° boring bar for indexable inserts CN..

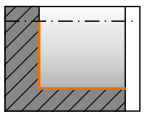


25 0034

Shank ∅ / insert size	21U 25 0034	21U 25 0035	ISO code toolholder	suitable indexable insert	∅ D_{min}				Shim	Shim screw	Clamp, screw, O-ring	
	Boring bar, steel										25 0034	25 0035
mm	right-hand	left-hand			mm	mm	mm	mm				
25/12	XXX	XXX	A25X DCLNR/L12	CN.. 1204..	29.5	17	24.3	225	259033 2	259027 2	259674 1	259675 1
32/12	XXX	XXX	A32X DCLNR/L12	CN.. 1204..	38	22	31	288	259033 2	259027 2	259674 1	259675 1

3×D | DIN 8024

A.. PCLN 95° boring bars for indexable inserts CN..

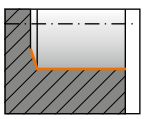


25 0036

Shank ∅ / insert size	21T 25 0036	21T 25 0037	ISO code toolholder	suitable indexable insert	∅ D_{min}				Shim	Lever	Lever screw	Shim pins pack	Shim punches pack
	Boring bar, steel												
mm	right-hand	left-hand			mm	mm	mm	mm					
16/09	XXX	XXX	A16M PCLNR/L09	CN.. 09T3..	20	11	15.25	150	–	259015 11	259018 9	–	–
20/09	XXX	XXX	A20Q PCLNR/L09	CN.. 09T3..	25	13	18	180	–	259015 11	259018 9	–	–
25/09	XXX	XXX	A25R PCLNR/L09	CN.. 09T3..	32	17	23	200	–	259015 11	259018 12	–	–
25/12	XXX	XXX	A25R PCLNR/L12	CN.. 1204..	32	17	24	200	259031 2	259015 2	259018 8	259044 2	259047 2
32/12	XXX	XXX	A32S PCLNR/L12	CN.. 1204..	40	22	31	250	259031 2	259015 2	259018 2	259044 2	259047 2
40/12	XXX	XXX	A40T PCLNR/L12	CN.. 1204..	50	27	38.5	300	259031 2	259015 2	259018 2	259044 2	259047 2
50/12	XXX	XXX	A50U PCLNR/L12	CN.. 1204..	63	35	48	350	259031 2	259015 2	259018 2	259044 2	259047 2
40/16	XXX	XXX	A40T PCLNR/L16	CN.. 1606..	50	27	38.5	300	259031 35	259015 12	259018 11	259044 6	259047 4
50/16	XXX	XXX	A50U PCLNR/L16	CN.. 1606..	63	35	48	350	259031 35	259015 12	259018 11	259044 6	259047 4
50/19	XXX	XXX	A50U PCLNR/L19	CN.. 1906..	63	35	48	350	259031 36	259015 13	259018 13	259044 7	259047 5

3×D | DIN 8024

A.. PCKN 75° boring bars for indexable inserts CN..



25 0042

Shank ∅ / insert size	21T 25 0042	21T 25 0043	ISO code toolholder	suitable indexable insert	∅ D_{min}				Shim	Lever	Lever screw	Shim pins pack	Shim punches pack
	Boring bar, steel												
mm	right-hand	left-hand			mm	mm	mm	mm					
25/12	XXX	XXX	A25T PCKNR/L12	CN.. 1204..	32	17	23	300	259031 2	259015 2	259018 8	259044 2	259047 2
32/12	XXX	XXX	A32U PCKNR/L12	CN.. 1204..	40	22	31	350	259031 2	259015 2	259018 2	259044 2	259047 2

Indexable inserts CN..

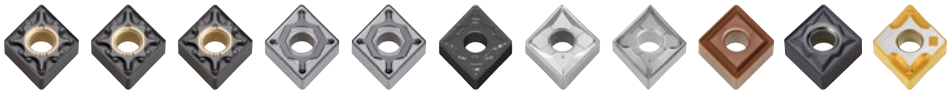
CNMG Finishing

Grade			HB7010-1	HB7020	HB7035-1	HB7120-1	HB7140-1	HB7415	
21G 25 0050		CNMG 09T304	XXX	XXX	XXX	XXX	XXX	XXX	10
21G 25 0052		CNMG 09T308	XXX	XXX	XXX	XXX	XXX	XXX	10
21G 25 0058		CNMG 120404	XXX	XXX	XXX	XXX	XXX	XXX	10
21G 25 0059	Garant	CNMG 120404 wiper	–	XXX	–	–	–	–	10
21G 25 0060		CNMG 120408	XXX	XXX	XXX	XXX	XXX	XXX	10
21G 25 0061		CNMG 120408 wiper	–	XXX	–	–	–	–	10
21G 25 0063		CNMG 120412 wiper	–	XXX	–	–	–	–	10
●			P	P	P	M	M	S	
⚙			◉	◪	◡	◉	◪	◉	
Chip breaker (25 0050, 25 0052, 25 0058, 25 0060)			SS	SS	SS	VS	VS	TIS	
Chip breaker (25 0059, 25 0061, 25 0063)			–	WSS	–	–	–	–	
a_p		mm	0.3 – 2.5	0.3 – 2.5	0.3 – 2.5	0.3 – 2.5	0.3 – 2.5	0.3 – 2	
f		mm/rev.	0.1 – 0.4	0.1 – 0.4	0.1 – 0.4	0.15 – 0.5	0.15 – 0.5	0.1	
v_c main application		m/min	150 – 500	150 – 400	120 – 350	90 – 290	70 – 260	60 – 70	

Grade			PV720	CA510	CA515	CA025P	CA6525	PR005S	PR015S	SW05	
25E 25 0102	KYOCERA	CNMG 120404	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	10
25E 25 0103		CNMG 120404 wiper	–	XXX	XXX	XXX	–	–	–	–	10
25E 25 0104		CNMG 120408	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	10
25E 25 0105		CNMG 120408 wiper	–	XXX	XXX	XXX	–	–	–	–	10
●			P	P	P	P	M	S	S	Ti	
⚙			◉	◉	◉	◪	◪	◉	◪	◉	
Chip breaker (25 0102, 25 0104)			PQ	PQ	PQ	PQ	MQ	MQ	MQ	MQ	
Chip breaker (25 0103, 25 0105)			–	WP	WP	WP	–	–	–	–	
a_p		mm	0.2 – 2.5	0.2 – 2.5	0.2 – 2.5	0.2 – 2.5	0.3 – 2	0.2 – 1.5	0.2 – 1.5	0.2 – 1	
f		mm/rev.	0.05 – 0.3	0.13 – 0.4	0.13 – 0.4	0.13 – 0.4	0.05 – 0.25	0.03 – 0.12	0.05 – 0.18	0.05 – 0.3	
v_c main application		m/min	110 – 520	180 – 590	140 – 480	105 – 435	60 – 220	30 – 90	25 – 70	50 – 140	

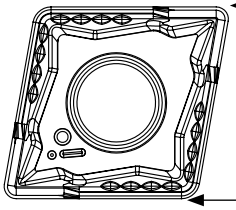
Grade			HBT020	HBT130	
22D 25 0090	HOLEX	CNMG 09T304	XXX	XXX	10
22D 25 0092		CNMG 120404	XXX	XXX	10
22D 25 0093		CNMG 120408	XXX	XXX	10
●			P	M	
⚙			◪	◪	
Chip breaker			PF	MF	
a_p		mm	0.5 – 2	0.5 – 2.5	
f		mm/rev.	0.1 – 0.4	0.15 – 0.45	
v_c main application		m/min	120 – 330	40 – 220	

CN.G Medium machining



Grade			HB7010-1	HB7020	HB7035-1	HB7120-1	HB7140-1	HB7210-1	HU7305	HB7410-1	HB7415	HB725	HB730-1	
21G 25 0150		CN.G 09T304	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	–	–	10
21G 25 0152		CNMG 09T308	XXX	XXX	XXX	XXX	XXX	XXX	–	–	XXX	–	–	10
21G 25 0156		CN.G 120404	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	10
21G 25 0158		CN.G 120408	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	10
21G 25 0157		CNMG 120408 wiper	–	XXX	–	–	–	–	–	–	–	–	–	10
21G 25 0165		CNMA 120408	–	–	–	–	–	XXX	–	–	–	–	–	10
21G 25 0160		CNMG 120412	XXX	XXX	XXX	XXX	XXX	XXX	–	–	XXX	XXX	–	10
21G 25 0159	Garant	CNMG 120412 wiper	–	XXX	–	–	–	–	–	–	–	–	–	10
21G 25 0161		CNMA 120412	–	–	–	–	–	XXX	–	–	–	–	–	10
21G 25 0162		CNMG 120416	XXX	XXX	XXX	XXX	XXX	XXX	–	–	–	–	–	10
21G 25 0168		CNMG 160608	XXX	XXX	XXX	XXX	XXX	–	–	–	–	–	–	10
21G 25 0170		CNMG 160612	XXX	XXX	XXX	XXX	XXX	–	–	–	–	–	–	10
21G 25 0172		CNMG 160616	XXX	XXX	XXX	XXX	XXX	–	–	–	–	XXX	–	10
21G 25 0174		CNMG 190616	XXX	XXX	XXX	XXX	XXX	–	–	–	–	–	–	10
21G 25 0176		CNMG 190624	XXX	XXX	XXX	XXX	XXX	–	–	–	–	–	–	10
●			P	P	P	M	M	K	N	Ti	S	UNI	UNI	
⚙			●	◪	◪	●	◪	◪	◪	●	●	◪	◪	
Chip breaker (25 0150, 25 0152, 25 0156, 25 0158, 25 0160, 25 0162, 25 0168, 25 0170, 25 0172, 25 0174, 25 0176)			SM	SM	SM	VM	VM	GM	AM	TAM	TIM	UM	XUM	
Chip breaker (25 0157, 25 0159)			–	WSM	–	–	–	–	–	–	–	–	–	
Tolerance			M	M	M	M	M	M	G	G	M	M	M	
a_p		mm	0.5 – 8	0.5 – 8	0.5 – 8	0.5 – 4	0.5 – 4	0.4 – 6.5	0.5 – 5	0.5 – 3	1 – 4	0.2 – 6	0.5 – 6	
f		mm/rev.	0.2 – 0.5	0.2 – 0.5	0.2 – 0.5	0.2 – 0.5	0.1 – 0.4	0.3 – 0.7	0.1 – 0.6	0.1 – 0.3	0.1 – 0.25	0.05 – 0.6	0.2 – 0.6	
v_c main application		m/min	120 – 440	120 – 350	100 – 320	80 – 260	60 – 230	100 – 450	400 – 600	60 – 90	50 – 70	50 – 250	35 – 230	

Type			HU7305	HB725	
21G 25 0140	Garant	CNMG 120408	XXX	XXX	10
21G 25 0141	Garant	CNMG 12040812	XXX	XXX	10
●			N	UNI	
⚙			●	◪	
Chip breaker			AM/AG	UM/UG	
a_p		mm	0.2 – 4		
f		mm/rev.	0.1 – 0.8	0.05 – 0.8	
v_c main application		m/min	400 – 600	50 – 250	



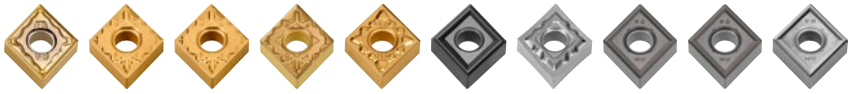
Main cutting edge
25 0140 (r_ε 0.8 mm)
25 0141 (r_ε 0.8 mm)

AM/UM chip breakers

Auxiliary cutting edge
25 0140 (r_ε 0.8 mm)
25 0141 (r_ε 0.12 mm)

AG/UG chip breakers

Grade			SP4019	SP0819	
28A 25 0182		CNMG 120404	XXX	XXX	10
28A 25 0184	KENNAMETAL	CNMG 120408	XXX	XXX	10
28A 25 0186		CNMG 120412	–	XXX	10
●			M	S	
○			S	M	
⚙			●	●	
Chip breaker			3J	4E	
a_p		mm	1 – 4	1 – 5.5	
f		mm/rev.	0.15 – 0.4	0.15 – 0.55	
v_c main application		m/min	120 – 300	30 – 120	
v_c secondary application		m/min	40 – 110	150 – 320	



Grade			PV720	CA510	CA515	CA025P	CA6525	CA4515	KW10	PR005S	PR015S	SW05	
25E 25 0210		CNMG 120404	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	10
25E 25 0211		CNMG 120404 wiper	–	XXX	XXX	XXX	–	–	–	–	–	–	10
25E 25 0212		CNMG 120408	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	10
25E 25 0213	KYOCERA	CNMG 120408 wiper	–	XXX	XXX	XXX	–	–	–	–	–	–	10
25E 25 0214		CNMG 120412	XXX	XXX	XXX	XXX	XXX	XXX	–	–	–	–	10
25E 25 0215		CNMG 120412 wiper	–	XXX	XXX	XXX	–	–	–	–	–	–	10
25E 25 0216		CNMG 120416	–	XXX	XXX	XXX	XXX	XXX	–	–	–	–	10
●			P	P	P	P	M	K	N	S	S	Ti	
⚙			◎	◎	◎	◙	◙	◙	◙	◎	◙	◎	
Chip breaker (25 0210, 25 0212, 25 0214, 25 0216)			PG	PS	PS	PS	MS	STD	AH	MU	MU	MU	
Chip breaker (25 0211, 25 0213, 25 0215)			–	WQ	WQ	WQ	–	–	–	–	–	–	
a_p		mm	1 – 3.5	1 – 3.5	1 – 3.5	1 – 3.5	0.7 – 4	0.5 – 7	1 – 4	0.5 – 4	0.5 – 4	0.5 – 3	
f		mm/rev.	0.15 – 0.35	0.15 – 0.35	0.15 – 0.35	0.15 – 0.35	0.1 – 0.35	0.05 – 0.7	0.1 – 0.35	0.05 – 0.15	0.05 – 0.18	0.1 – 0.35	
v_c main application		m/min	110 – 490	80 – 450	70 – 430	70 – 420	60 – 220	110 – 360	60 – 400	30 – 90	25 – 70	50 – 140	

Grade			HBT020	HBT130	
22D 25 0188		CNMG 120404	XXX	XXX	10
22D 25 0196		CNMG 120404	XXX	XXX	10
22D 25 0197	HOLEX	CNMG 120408	XXX	XXX	10
22D 25 0198		CNMG 120412	XXX	XXX	10
22D 25 0204		CNMG 160608	XXX	XXX	10
●			P	M	
⚙			◙	◙	
Chip breaker			PM	MM	
a_p		mm	0.8 – 5	0.5 – 5	
f		mm/rev.	0.1 – 0.45	0.12 – 0.45	
v_c main application		m/min	100 – 280	40 – 220	

CNMG Roughing

Grade			HB7010-1	HB7020	HB7035-1	HB7120-1	HB7140-1	HB7210-1	
21G 25 0322		CNMG 120408	XXX	XXX	XXX	XXX	XXX	XXX	10
21G 25 0324		CNMG 120412	XXX	XXX	XXX	XXX	XXX	XXX	10
21G 25 0328		CNMG 120416	XXX	XXX	XXX	XXX	XXX	XXX	10
21G 25 0334	Garant	CNMG 160608	XXX	XXX	XXX	XXX	XXX	–	10
21G 25 0336		CNMG 160612	XXX	XXX	XXX	XXX	XXX	XXX	10
21G 25 0338		CNMG 160616	XXX	XXX	XXX	XXX	XXX	XXX	10
21G 25 0341		CNMG 190616	XXX	XXX	XXX	XXX	XXX	–	10
21G 25 0343		CNMG 190624	XXX	XXX	XXX	XXX	XXX	–	10
●			P	P	P	M	M	K	
⚙			◎	◙	◡	◎	◙	◙	
Chip breaker			SG	SG	SG	VG	VG	GG	
a_p		mm	1.5 – 8	1.5 – 8	1.5 – 8	1.5 – 6	1.5 – 6	0.4 – 6.5	
f		mm/rev.	0.25 – 0.6	0.25 – 0.6	0.25 – 0.6	0.25 – 0.6	0.25 – 0.6	0.32 – 0.8	
v_c main application		m/min	100 – 375	100 – 300	90 – 260	70 – 240	50 – 210	100 – 450	

Grade			CA510	CA515	CA025P	
25E 25 0371	KYOCERA	CNMG 120408	XXX	XXX	XXX	10
25E 25 0372		CNMG 120412	XXX	XXX	XXX	10
25E 25 0373		CNMG 120416	XXX	XXX	XXX	10
25E 25 0376		CNMG 160608	XXX	XXX	XXX	10
25E 25 0377		CNMG 160612	XXX	XXX	XXX	10
25E 25 0378		CNMG 160616	XXX	XXX	XXX	10
25E 25 0382		CNMG 190608	XXX	XXX	XXX	10
25E 25 0383		CNMG 190612	XXX	XXX	XXX	10
25E 25 0384		CNMG 190616	XXX	XXX	XXX	10
●			P	P	P	
⚙			●	●	▨	
Chip breaker				PH		
a_p		mm		1 – 10		
f		mm/rev.		0.25 – 0.8		
v_c main application		m/min	80 – 450	70 – 430	70 – 420	

Grade			HBT020	HBT130	
22D 25 0218	HOLEX	CNMG 120404	XXX	XXX	10
22D 25 0219		CNMG 120412	XXX	XXX	10
22D 25 0220		CNMG 160608	XXX	XXX	10
22D 25 0221		CNMG 160612	XXX	XXX	10
●			P	M	
⚙			▨	▨	
Chip breaker			PR	MR	
a_p		mm	1.8 – 6	2 – 6	
f		mm/rev.	0.2 – 0.6	0.15 – 0.55	
v_c main application		m/min	80 – 260	40 – 220	

CNMM Rough machining

Grade			HB7010-1	HB7020	HB7035-1	HB7120-1	HB7140-1	
21G 25 0452	Garant	CNMM 120408	XXX	XXX	XXX	XXX	XXX	10
21G 25 0453		CNMM 120412	XXX	XXX	XXX	XXX	XXX	10
21G 25 0455		CNMM 120416	XXX	XXX	XXX	XXX	XXX	10
21G 25 0458		CNMM 160612	XXX	XXX	XXX	XXX	XXX	10
21G 25 0460		CNMM 160616	XXX	XXX	XXX	XXX	XXX	10
21G 25 0462		CNMM 160624	XXX	XXX	XXX	XXX	XXX	10
21G 25 0464		CNMM 190616	XXX	XXX	XXX	XXX	XXX	10
21G 25 0466		CNMM 190624	XXX	XXX	XXX	XXX	XXX	10
●			P	P	P	M	M	
⚙			●	▨	◔	●	▨	
Chip breaker			SR	SR	SR	VR	VR	
a_p		mm	2 – 10	2 – 10	2 – 10	2 – 8	2 – 8	
f		mm/rev.	0.4 – 1.2	0.4 – 1.2	0.4 – 1.2	0.4 – 1.2	0.2 – 0.8	
v_c main application		m/min	100 – 375	100 – 300	90 – 260	60 – 210	40 – 180	

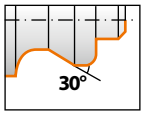
Type			CA510	CA515	CA025P	PR005S	PR015S		Shim
25E 25 0488		CNMM 1204XR	–	–	–	XXX	XXX	10	259031 15
25E 25 0489		CNMM 1204XL	–	–	–	XXX	XXX	10	259031 15
25E 25 0491		CNMM 120408	XXX	XXX	XXX	–	–	10	–
25E 25 0492		CNMM 120412	XXX	XXX	XXX	–	–	10	–
25E 25 0493		CNMM 120416	–	–	XXX	–	–	10	–
25E 25 0496	KYOCERA	CNMM 160608	XXX	XXX	XXX	–	–	10	–
25E 25 0497		CNMM 160612	–	XXX	XXX	–	–	10	–
25E 25 0498		CNMM 160616	XXX	XXX	XXX	–	–	10	–
25E 25 0502		CNMM 190608	–	–	XXX	–	–	10	–
25E 25 0503		CNMM 190612	XXX	XXX	XXX	–	–	10	–
25E 25 0504		CNMM 190616	XXX	XXX	XXX	–	–	10	–
●			P	P	P	S	S		
⚙									
Chip breaker			PX	PX	PX	SX	SX		
a_p		mm	1 – 11	1 – 11	1 – 11	0.5 – 4	0.5 – 4		
f		mm/rev.	0.25 – 0.9	0.25 – 0.9	0.25 – 0.9	0.15 – 0.45	0.15 – 0.45		
v_c main application		m/min	80 – 450	70 – 430	70 – 420	30 – 90	25 – 70		

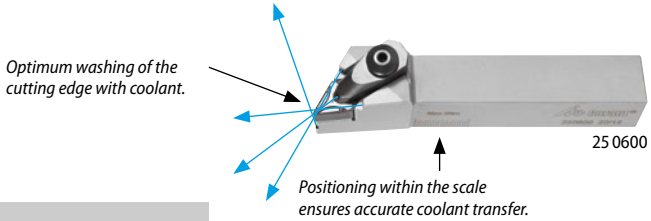
DIN ISO 5610

DJN 93° eco clamp / lever lock toolholder for indexable inserts DN..

With internal coolant feed right to the cutting edge. Cooling by means of precision nozzles effectively and efficiently reduces the thermal loading, since the coolant stream is optimally directed between the chip and cutting edge. This results in higher productivity, longer tool life and higher process reliability.

Note: Coolant transfer only in conjunction with GARANT eco-system toolholders No. 317900 – 319886.





Clamping with adjustable clamp

Shank size / insert size	21U 25 0614	21U 25 0615	ISO code toolholder	suitable indexable insert				Shim	Shim screw	Clamp, screw, spring
	eco clamp toolholder, short									
mm	right-hand	left-hand			mm	mm	mm			
16/11	XXX	XXX	DDJNR/L 1616X11	DN.. 1104..	22	33	81	269007 1	259027 3	259036 8
20/15	XXX	XXX	DDJNR/L 2020X15	DN.. 1506..	25	38	97	259033 3	259027 2	259036 11
25/15	XXX	XXX	DDJNR/L 2525X15	DN.. 1506..	32	38	109.5	259033 3	259027 2	259036 11

Shank / insert size	21U 25 0600	21U 25 0601	ISO code toolholder	suitable indexable insert				Shim	Shim screw	Clamp, screw, spring
	eco clamp toolholder									
mm	right-hand	left-hand			mm	mm	mm			
16/11	XXX	XXX	DDJNR/L 1616H11	DN.. 1104..	22	33	100	269007 1	259027 3	259036 8
20/15	XXX	XXX	DDJNR/L 2020K15	DN.. 1506..	25	38	125	259033 3	259027 2	259036 11
25/15	XXX	XXX	DDJNR/L 2525M15	DN.. 1506..	32	38	150	259033 3	259027 2	259036 11

Clamping with toggle lever

Shank / insert size	21U 25 0604	21U 25 0605	ISO code toolholder	suitable indexable insert				Shim	Lever	Lever screw	Spring
	eco lever lock toolholder, short										
mm	right-hand	left-hand			mm	mm	mm				
16/11	XXX	XXX	PDJNR/L 1620X11	DN.. 1104..	25	33	80	259031 12	259015 4	259018 4	259046 2
20/11	XXX	XXX	PDJNR/L 2020X11	DN.. 1104..	25	33	92	259031 12	259015 4	259018 4	259046 2
20/15	XXX	XXX	PDJNR/L 2020H15	DN.. 1506..	25	41	100	259031 13	259015 5	259018 5	259046 1
25/15	XXX	XXX	PDJNR/L 2525X15	DN.. 1506..	32	41	112.5	259031 13	259015 5	259018 5	259046 1

DIN ISO 5610

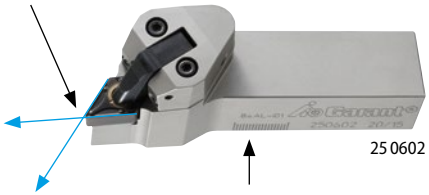
DDJN 93° eco QT clamp toolholder for indexable inserts DN..

With internal coolant feed right to the cutting edge. Cooling by means of precision nozzles effectively and efficiently reduces the thermal loading, since the coolant stream is optimally directed between the chip and cutting edge. This results in higher productivity, longer tool life and higher process reliability.

Advantage: **Combine the advantages of Garant eco and tool-less insert changing. Release the stop at the push of a button – change the insert – press the clamp to secure it.**
A simple and convenient way to reduce non-productive times.
Consistent clamping force, high interchange accuracy, maintenance-free.

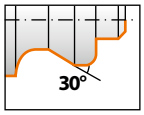
Note: Coolant transfer only in conjunction with GARANT eco-system toolholders No. 317900 – 319886.

Optimum cooling of the cutting edge with coolant.



25 0602

Positioning within the scale ensures accurate coolant transfer.

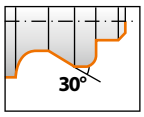


Shank / insert size	21U 25 0602	21U 25 0603	ISO code toolholder	suitable indexable insert				Shim	Shim screw	Clamp
	eco QT clamp toolholder									
mm	right-hand	left-hand			mm	mm	mm			
20/15	XXX	XXX	DDJNR/L 2025X15	DN.. 1506..	32	46	105	259031 30	259025 1	259038 7
25/15	XXX	XXX	DDJNR/L 2525X15	DN.. 1506..	32	46	117.5	259031 30	259025 1	259038 7

DIN ISO 5610

DDJN 93° QuickTurn clamp toolholder for indexable inserts DN..

Advantage: Inserts can be changed without using tools. **Release the stop at the push of a button – change the insert – press the clamp to secure it.**
A simple and convenient way to reduce non-productive times.
Consistent clamping force, high interchange accuracy, maintenance-free.

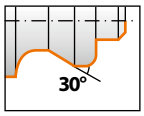


25 0606

Shank / insert size	21U 25 0606	21U 25 0607	ISO code toolholder	suitable indexable insert				Shim	Shim screw	Clamp
	QuickTurn clamp toolholder									
mm	right-hand	left-hand			mm	mm	mm			
20/11	XXX	XXX	DDJNR/L 2025K11	DN.. 1104..	32	48.5	125	259031 8	259025 5	259038 6
25/11	XXX	XXX	DDJNR/L 2525M11	DN.. 1104..	32	48.5	150	259031 8	259025 5	259038 6
20/15	XXX	XXX	DDJNR/L 2025K15	DN.. 1506..	32	46	125	259031 29	259025 4	259038 7
25/15	XXX	XXX	DDJNR/L 2525M15	DN.. 1506..	32	46	150	259031 29	259025 4	259038 7

DIN ISO 5610

DDJN 93° clamp toolholder for indexable inserts DN..

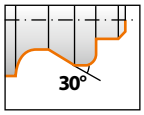


25 0608

Shank / insert size	21T 25 0608	21T 25 0609	ISO code toolholder	suitable indexable insert				Shim	Shim screw	Clamp, screw, spring
	Clamp toolholder									
mm	right-hand	left-hand			mm	mm	mm			
20/15	XXX	XXX	DDJNR/L 2020K15	DN.. 1506..	25	35	125	259031 28	259025 10	259035 2
25/15	XXX	XXX	DDJNR/L 2525M15	DN.. 1506..	32	36	150	259031 28	259025 10	259035 2
32/15	XXX	XXX	DDJNR/L 3232 P15	DN.. 1506..	40	40	170	259031 28	259025 10	259035 2

DIN ISO 5610

PDJN 93° lever lock toolholder for indexable inserts DN..

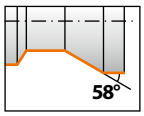


25 0610

Shank / insert size	21T 25 0610	21T 25 0611	ISO code toolholder	suitable indexable insert				Shim	Lever	Lever screw	Shim pins pack	Shim punch-es pack
	Lever lock toolholder											
mm	right-hand	left-hand			mm	mm	mm					
16/11	XXX	XXX	PDJNR/L 1616H11	DN.. 1104..	20	25	100	2590317	2590157	2590186	2590444	2590473
20/11	XXX	XXX	PDJNR/L 2020K11	DN.. 1104..	25	28	125	2590317	2590157	2590186	2590444	2590473
25/11	XXX	XXX	PDJNR/L 2525M11	DN.. 1104..	32	33	150	2590317	2590157	2590186	2590444	2590473
20/15	XXX	XXX	PDJNR/L 2020K15	DN.. 1506..	25	35	125	259031 28	2590158	2590187	2590442	2590472
25/15	XXX	XXX	PDJNR/L 2525M15	DN.. 1506..	32	35	150	259031 28	2590158	2590187	2590442	2590472
32/15	XXX	XXX	PDJNR/L 3232P15	DN.. 1506..	40	36	170	259031 28	2590158	2590187	2590442	2590472

DIN ISO 5610

PDNN 63° lever lock toolholder for indexable inserts DN..

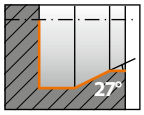


25 0612

Shank / insert size	21T 25 0612	21T 25 0613	ISO code toolholder	suitable indexable insert				Shim	Lever	Lever screw	Shim pins pack	Shim punch-es pack
	Lever lock toolholder											
mm	right-hand	left-hand			mm	mm	mm					
16/11	XXX	XXX	PDNNR/L 1616H11	DN.. 1104..	8	25	100	2590317	2590157	2590186	2590444	2590473
20/11	XXX	XXX	PDNNR/L 2020K11	DN.. 1104..	10	25	125	2590317	2590157	2590186	2590444	2590473
25/11	XXX	XXX	PDNNR/L 2525M11	DN.. 1104..	12	29	150	2590317	2590157	2590186	2590444	2590473
20/15	XXX	XXX	PDNNR/L 2020K15	DN.. 1506..	12	35	125	259031 28	2590158	2590187	2590442	2590472
25/15	XXX	XXX	PDNNR/L 2525M15	DN.. 1506..	12	37	150	259031 28	2590158	2590187	2590442	2590472
32/15	XXX	XXX	PDNNR/L 3232P15	DN.. 1506..	16.8	37	170	259031 28	2590158	2590187	2590442	2590472

3×D DIN 8024

A.. PDUN 93° boring bars for indexable inserts DN..



25 0626

Shank ∅ / insert size	21T 25 0626	21T 25 0627	ISO code toolhold-er	suitable indexa-ble insert					Shim	Lever	Lever screw	Shim pins pack	Shim punches pack
	Boring bar, steel												
mm	right-hand	left-hand			∅ D_{min} mm	mm	mm	mm					
20/11	XXX	XXX	A20Q PDUNR/L11	DN.. 1104..	25	16	19	180	–	259015 10	259018 12	–	–
25/11	XXX	XXX	A25R PDUNR/L11	DN.. 1104..	32	18.5	24	200	2590317	2590157	2590186	2590444	2590472
32/15	XXX	XXX	A32S PDUNR/L15	DN.. 1506..	40	22	31	250	259031 28	2590158	2590187	2590442	2590472
40/15	XXX	XXX	A40T PDUNR/L15	DN.. 1506..	50	27	38.5	300	259031 28	2590158	2590187	2590442	2590472
50/15	XXX	XXX	A50U PDUNR/L15	DN.. 1506..	63	35	48	350	259031 28	2590158	2590187	2590442	2590472

Indexable inserts DN..

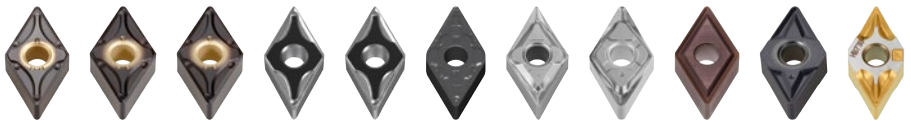
DNMG Finishing

Grade			HB7010-1	HB7020	HB7035-1	HB7120-1	HB7140-1	HB7415	
21G 25 0652	Garant	DNMG 110404	XXX	XXX	XXX	XXX	XXX	XXX	10
21G 25 0653	Garant	DNMG 110404 wiper	–	XXX	–	–	–	–	10
21G 25 0654	Garant	DNMG 110408	XXX	XXX	XXX	XXX	XXX	XXX	10
21G 25 0655	Garant	DNMG 110408 wiper	–	XXX	–	–	–	–	10
21G 25 0658	Garant	DNMG 150604	XXX	XXX	XXX	XXX	XXX	XXX	10
21G 25 0659	Garant	DNMG 150604 wiper	–	XXX	–	–	–	–	10
21G 25 0660	Garant	DNMG 150608	XXX	XXX	XXX	XXX	XXX	XXX	10
21G 25 0661	Garant	DNMG 150608 wiper	–	XXX	–	–	–	–	10
21G 25 0663	Garant	DNMG 150612 wiper	–	XXX	–	–	–	–	10
●			P	P	P	M	M	S	
⚙			◍	◪	◔	◍	◪	◍	
Chip breaker (25 0652, 25 0654, 25 0658, 25 0660)			SS	SS	SS	VS	VS	TIS	
Chip breaker (25 0653, 25 0655, 25 0659, 25 0661, 25 0663)			–	WSS	–	–	–	–	
a_p		mm	0.3 – 2						
f		mm/rev.	0.1 – 0.4	0.1 – 0.4	0.1 – 0.4	0.1 – 0.4	0.1 – 0.4	0.1 – 0.2	
v_c main application		m/min	150 – 500	150 – 400	120 – 350	90 – 290	70 – 260	60 – 70	

Grade			PV720	CA510	CA515	CA025P	CA6525	PR005S	PR015S	SW05	
25E 25 0696	KYOCERA	DNMG 150604	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	10
25E 25 0697	KYOCERA	DNMG 150608	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	10
●			P	P	P	P	M	S	S	Ti	
⚙			◍	◍	◍	◪	◪	◍	◪	◍	
Chip breaker			PQ	PQ	PQ	PQ	MQ	MQ	MQ	MQ	
a_p		mm	0.2 – 2.5	0.2 – 2.5	0.2 – 2.5	0.2 – 2.5	0.3 – 2	0.2 – 1.5	0.2 – 1.5	0.2 – 1	
f		mm/rev.	0.05 – 0.3	0.13 – 0.4	0.13 – 0.4	0.13 – 0.4	0.05 – 0.25	0.03 – 0.12	0.05 – 0.18	0.05 – 0.3	
v_c main application		m/min	110 – 520	180 – 590	105 – 510	105 – 435	60 – 220	30 – 90	25 – 70	50 – 140	

Grade			HBT020	HBT130	
22D 25 0666		DNMG 110404	XXX	XXX	10
22D 25 0668	HOLEX	DNMG 150604	XXX	XXX	10
22D 25 0669		DNMG 150608	XXX	XXX	10
●			P	M	
⚙			◪	◪	
Chip breaker			PF	MF	
a_p		mm	0.5 – 2	0.5 – 2	
f		mm/rev.	0.1 – 0.4	0.15 – 0.45	
v_c main application		m/min	120 – 330	40 – 220	

DN.G Medium machining



Grade			HB7010-1	HB7020	HB7035-1	HB7120-1	HB7140-1	HB7210-1	HU7305	HB7410-1	HB7415	HB725	HB730-1	
21G 25 0752	Garant	DN.G 110404	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	10
21G 25 0754		DN.G 110408	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	–	10
21G 25 0760		DN.G 150604	XXX	XXX	XXX	XXX	XXX	–	XXX	XXX	XXX	XXX	XXX	10
21G 25 0762		DN.G 150608	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	10
21G 25 0763		DNMG 150608 wiper	–	XXX	–	–	–	–	–	–	–	–	–	10
21G 25 0764		DNMG 150612	XXX	XXX	XXX	XXX	XXX	–	–	–	XXX	XXX	–	10
21G 25 0765		DNMG 150612 wiper	–	XXX	–	–	–	–	–	–	–	–	–	10
●			P	P	P	M	M	K	N	Ti	S	UNI	UNI	
⚙			●	◪	◡	●	◪	◪	◪	●	●	◪	◪	
Chip breaker (25 0752, 25 0754, 25 0760, 25 0762, 25 0764)			SM	SM	SM	VM	VM	GM	AM	TAM	TIM	UM	XUM	
Chip breaker (25 0763, 25 0765)			–	WSM	–	–	–	–	–	–	–	–	–	
Tolerance			M	M	M	M	M	M	G	G	M	M	M	
a_p		mm	0.5 – 5	0.5 – 5	0.5 – 5	0.5 – 5	0.5 – 5	0.4 – 6.5	0.5 – 5	0.5 – 3	0.5 – 4	0.2 – 6	0.5 – 6	
f		mm/rev.	0.2 – 0.5	0.2 – 0.5	0.2 – 0.5	0.2 – 0.5	0.2 – 0.5	0.3 – 0.7	0.1 – 0.6	0.1 – 0.3	0.1 – 0.25	0.05 – 0.6	0.2 – 0.6	
v_c main application		m/min	120 – 440	120 – 350	100 – 320	80 – 260	60 – 230	100 – 450	400 – 600	60 – 90	50 – 70	50 – 250	35 – 230	

Grade			PV720	CA510	CA515	CA025P	CA6525	CA4515	KW10	PR005S	PR015S	SW05	
25E 25 0796	KYOCERA	DNMG 150604	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	10
25E 25 0797		DNMG 150608	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	10
25E 25 0798		DNMG 150612	XXX	XXX	XXX	XXX	XXX	XXX	–	–	–	–	10
●			P	P	P	P	M	K	N	S	S	Ti	
⚙			●	●	●	◪	◪	◪	◪	●	◪	●	
Chip breaker			PG	PS	PS	PS	MS	STD	AH	MU	MU	MU	
a_p		mm	1 – 4	1 – 4	1 – 4	1 – 4	0.7 – 4	0.5 – 5	0.8 – 3.5	0.5 – 3.5	0.5 – 3.5	0.5 – 2.5	
f		mm/rev.	0.15 – 0.6	0.15 – 0.6	0.15 – 0.6	0.15 – 0.6	0.1 – 0.35	0.05 – 0.7	0.1 – 0.35	0.05 – 0.15	0.05 – 0.18	0.1 – 0.35	
v_c main application		m/min	110 – 490	80 – 450	70 – 435	70 – 420	60 – 220	110 – 360	60 – 400	30 – 90	25 – 70	50 – 140	

Grade			HBT020	HBT130	
22D 25 0780	HOLEX	DNMG 150608	XXX	XXX	10
22D 25 0781		DNMG 110408	XXX	XXX	10
22D 25 0783		DNMG 150604	XXX	XXX	10
22D 25 0784		DNMG 150608	XXX	XXX	10
●			P	M	
⚙			◪	◪	
Chip breaker			PM	MM	
a_p		mm	0.8 – 5	0.5 – 5	
f		mm/rev.	0.1 – 0.45	0.12 – 0.45	
v_c main application		m/min	100 – 280	40 – 220	

DNMG Rough machining

Grade			HB7010-1	HB7020	HB7035-1	HB7120-1	HB7140-1	HB7210-1	
21G 25 0862	Garant	DNMG 150608	XXX	XXX	XXX	XXX	XXX	XXX	10
21G 25 0864	Garant	DNMG 150612	XXX	XXX	XXX	XXX	XXX	XXX	10
●			P	P	P	M	M	K	
⚙			●	●	●	●	●	●	
Chip breaker			SG	SG	SG	VG	VG	GG	
a_p		mm	1.5 – 6	1.5 – 6	1.5 – 6	1.5 – 6	1.5 – 6	0.4 – 6.5	
f		mm/rev.	0.25 – 0.6	0.25 – 0.6	0.25 – 0.6	0.25 – 0.6	0.25 – 0.6	0.32 – 0.8	
v_c main application		m/min	100 – 375	100 – 300	90 – 260	70 – 240	50 – 210	100 – 450	

Grade			CA510	CA515	CA025P	
25E 25 0892	KYOCERA	DNMG 150608	–	XXX	XXX	10
25E 25 0893	KYOCERA	DNMG 150612	XXX	XXX	XXX	10
25E 25 0894	KYOCERA	DNMG 150616	XXX	XXX	XXX	10
●			P	P	P	
⚙			●	●	●	
Chip breaker				PH		
a_p		mm		1 – 5		
f		mm/rev.		0.25 – 0.8		
v_c main application		m/min	80 – 450	70 – 435	70 – 420	

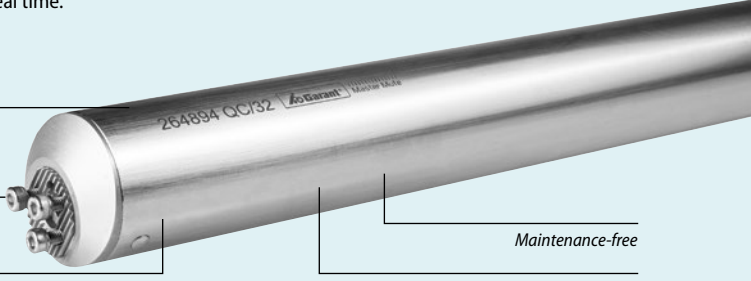
Grade			HBT020	HBT130	
22D 25 0786	HOLEX	DNMG 150608	XXX	XXX	10
22D 25 0787	HOLEX	DNMG 150612	XXX	XXX	10
●			P	M	
⚙			●	●	
Chip breaker			PR	MR	
a_p		mm	1.8 – 6	2 – 6	
f		mm/rev.	0.2 – 0.6	0.15 – 0.55	
v_c main application		m/min	80 – 260	40 – 220	

Garant GARANT Master Mute

new

Vibration damping by plug-and-play!

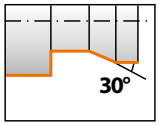
The new vibration-damping GARANT boring bars adapt to the machining conditions in real time.
High component quality at long overhang lengths – simple and reliable.



You can find our new range of vibration-damping tools in compact format on pages 700 – 702.

DIN ISO 5610

Garant CKJN 93° clamping toolholders for indexable inserts KNUX



25 1008

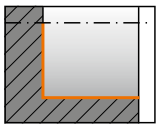
Shank / insert size	21T 25 1008	21T 25 1009	ISO code toolholder	suitable indexable insert				Shim		Clamp		Screw for clamp	Spring	Shim pins pack
	Clamping toolholder													
mm	right-hand	left-hand			mm	mm	mm	25 1008	25 1009	25 1008	25 1009			
20/16	XXX	XXX	CKJNR/L 2020K16	KNUX 1604.. R/L	30	32	125	2590314	2590316	2590381 6	2590381 7	2590213	2590463	2590443
25/16	XXX	XXX	CKJNR/L 2525M16	KNUX 1604.. R/L	32	32	150	2590314	2590316	2590381 6	2590381 7	2590213	2590463	2590443
32/16	XXX	XXX	CKJNR/L 3232P16	KNUX 1604.. R/L	40	32	170	2590314	2590316	2590381 6	2590381 7	2590213	2590463	2590443

3×D

DIN 8024

Garant CKUN 93° boring bars for indexable inserts KNUX

Note:
25 1016 – With KNUX 1604.. Use L insert
25 1017 – With KNUX 1604.. Use R insert

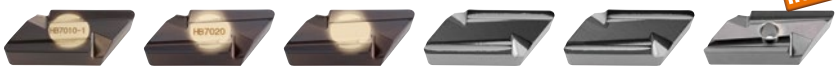


25 1016

Shank ∅ / insert size	21T 25 1016	21T 25 1017	ISO code toolholder	suitable indexable insert					Shim		Clamping claw		Screw for clamp	Spring	Shim pins pack	Pin
	Boring bar, steel				∅ D_{min}											
mm	right-hand	left-hand			mm	mm	mm	mm	25 1016	25 1017	25 1016	25 1017				
25/16	XXX	XXX	A25T CKUNR/L16	KNUX 1604.. R/L	36	20.5	23	300	–	–	2590381 7	2590381 6	2590213	–	2590443	2590494
32/16	XXX	XXX	A32U CKUNR/L16	KNUX 1604.. R/L	40	22	31	350	2590316	2590314	2590381 7	2590381 6	2590213	2590463	2590443	2590494

Garant Indexable inserts KNUX

KNUX Medium machining



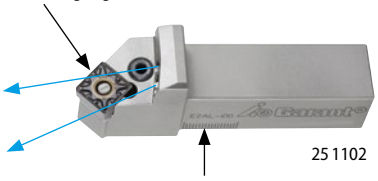
Grade		HB7010-1	HB7020	HB7035-1	HB7120-1	HB7140-1	HB725	
21G 25 1030	KNUX 160405R	XXX	XXX	XXX	XXX	XXX	XXX	10
21G 25 1032	KNUX 160405L	XXX	XXX	XXX	XXX	XXX	XXX	10
21G 25 1036	KNUX 160410R	XXX	XXX	XXX	XXX	XXX	–	10
21G 25 1038	KNUX 160410L	XXX	XXX	XXX	XXX	XXX	–	10
●		P	P	P	M	M	UNI	
⚙		●	●	●	●	●	●	
Chip breaker		SM	SM	SM	VM	VM	UM	
Chip diverter	mm	2.2						
a_p	mm	0.5 – 5						
f	mm/rev.	0.2 – 0.5						
v_c main application	m/min	120 – 440	120 – 350	100 – 320	80 – 260	60 – 230	60 – 250	

DIN ISO 5610

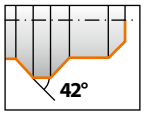
PSSN 45° eco lever lock toolholder for indexable inserts SN..

With internal coolant feed right to the cutting edge. Cooling by means of precision nozzles effectively and efficiently reduces the thermal loading, since the coolant stream is optimally directed between the chip and cutting edge. This results in higher productivity, longer tool life and higher process reliability.

Note: Coolant transfer only in conjunction with GARANT eco-system toolholders No. 317900 – 319886.



25 1102



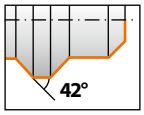
Shank / insert size	21U 25 1102	21U 25 1103	ISO code toolholder	suitable indexable insert				Shim	Lever	Lever screw	Spring
	eco lever lock toolholder										
mm	right-hand	left-hand			mm	mm	mm				
16/12	XXX	XXX	PSSNR/L 1616X12	SN.. 1204..	25	34	81	25903114	259015 3	259018 3	259046 1
20/12	XXX	XXX	PSSNR/L 2020X12	SN.. 1204..	25	34	93	25903114	259015 3	259018 3	259046 1
25/12	XXX	XXX	PSSNR/L 2525X12	SN.. 1204..	32	34	105.5	25903114	259015 3	259018 3	259046 1

DIN ISO 5610

DSSN 45° QuickTurn clamp toolholder for indexable inserts SN..

Advantage: Inserts can be changed without using tools. **Release the stop at the push of a button – change the insert – press the clamp to secure it.**
A simple and convenient way to reduce non-productive times.
Consistent clamping force, high interchange accuracy, maintenance-free.

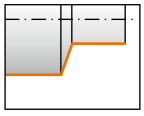
25 1104



Shank / insert size	21U 25 1104	21U 25 1105	ISO code toolholder	suitable indexable insert				Shim	Shim screw	Clamp
	QuickTurn clamp toolholder									
mm	right-hand	left-hand			mm	mm	mm			
20/12	XXX	XXX	DSSNR/L 2025K12	SN.. 1204..	32	49	125	25903121	259025 4	259038 8
25/12	XXX	XXX	DSSNR/L 2525M12	SN.. 1204..	32	49	150	25903121	259025 4	259038 8

DIN ISO 5610

PSBN 75° lever lock toolholder for indexable inserts SN..

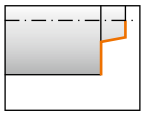


25 1106

Shank / insert size	21T 25 1106	21T 25 1107	ISO code toolholder	suitable indexable insert				Shim	Lever	Lever screw	Shim pins pack	Shim punches pack
	Lever lock toolholder											
mm	right-hand	left-hand			mm	mm	mm					
20/12	XXX	XXX	PSBNR/L 2020K12	SN.. 1204..	17	28	125	25903120	259015 2	259018 2	259044 2	259047 2
25/12	XXX	XXX	PSBNR/L 2525M12	SN.. 1204..	22	29	150	25903120	259015 2	259018 2	259044 2	259047 2
25/15	XXX	XXX	PSBNR/L 2525M15	SN.. 1506..	22	32	150	25903137	259015 12	259018 11	259044 6	259047 4
32/15	XXX	XXX	PSBNR/L 3232P15	SN.. 1506..	27	32	170	25903137	259015 12	259018 11	259044 6	259047 4
32/19	XXX	XXX	PSBNR/L 3232P19	SN.. 1906..	27	39	170	25903138	259015 13	259018 13	259044 7	259047 5
40/19	XXX	XXX	PSBNR/L 4040S19	SN.. 1906..	35	48	250	25903116	259015 1	259018 1	259044 1	259047 1

DIN ISO 5610

Garant PSKN 75° lever lock toolholder for indexable inserts SN..

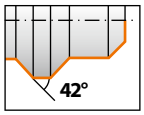


25 1110

Shank / insert size	21T 25 1110	21T 25 1111	ISO code toolholder	suitable indexable insert				Shim	Lever	Lever screw	Shim pins pack	Shim punch-es pack
	Lever lock toolholder											
mm	right-hand	left-hand			mm	mm	mm					
20/12	XXX	XXX	PSKNR/L 2020K12	SN.. 1204..	25	26	125	259031 20	259015 2	259018 2	259044 2	259047 2
25/12	XXX	XXX	PSKNR/L 2525M12	SN.. 1204..	32	26	150	259031 20	259015 2	259018 2	259044 2	259047 2
25/15	XXX	XXX	PSKNR/L 2525M15	SN.. 1506..	32	30	150	259031 37	259015 12	259018 11	259044 6	259047 4
32/15	XXX	XXX	PSKNR/L 3232P15	SN.. 1506..	40	30	170	259031 37	259015 12	259018 11	259044 6	259047 4
32/19	XXX	XXX	PSKNR/L 3232P19	SN.. 1906..	40	34	170	259031 38	259015 13	259018 13	259044 7	259047 5
40/19	XXX	XXX	PSKNR/L 4040S19	SN.. 1906..	50	45	250	259031 16	259015 1	259018 1	259044 1	259047 1

DIN ISO 5610

Garant PSSN 45° lever lock toolholder for indexable inserts SN..

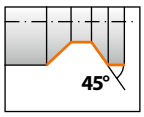


25 1112

Shank / insert size	21T 25 1112	21T 25 1113	ISO code toolholder	suitable indexable insert				Shim	Lever	Lever screw	Shim pins pack	Shim punch-es pack
	Lever lock toolholder											
mm	right-hand	left-hand			mm	mm	mm					
16/12	XXX	XXX	PSSNR/L 1616H12	SN.. 1204..	20	26	100	259031 20	259015 2	259018 2	259044 2	259047 2
20/12	XXX	XXX	PSSNR/L 2020K12	SN.. 1204..	25	29	125	259031 20	259015 2	259018 2	259044 2	259047 2
25/12	XXX	XXX	PSSNR/L 2525M12	SN.. 1204..	32	29	150	259031 20	259015 2	259018 2	259044 2	259047 2
25/15	XXX	XXX	PSSNR/L 2525M15	SN.. 1506..	32	35	150	259031 37	259015 12	259018 11	259044 6	259047 4
32/15	XXX	XXX	PSSNR/L 3232P15	SN.. 1506..	40	36	170	259031 37	259015 12	259018 11	259044 6	259047 4
32/19	XXX	XXX	PSSNR/L 3232P19	SN.. 1906..	40	40	170	259031 38	259015 13	259018 13	259044 7	259047 5
40/19	XXX	XXX	PSSNR/L 4040S19	SN.. 1906..	50	45	250	259031 16	259015 1	259018 1	259044 1	259047 1

DIN ISO 5610

Garant PSDN 45° lever lock toolholder for indexable inserts SN..



25 1114

Shank / insert size	21T 25 1114	ISO code toolholder	suitable indexable insert				Shim	Lever	Lever screw	Shim pins pack	Shim punch-es pack
	Lever lock toolholder										
mm	neutral			mm	mm	mm					
16/12	XXX	PSDNN 1616H12	SN.. 1204..	8.3	31	100	259031 20	259015 2	259018 2	259044 2	259047 2
20/12	XXX	PSDNN 2020K12	SN.. 1204..	10.3	28	125	259031 20	259015 2	259018 2	259044 2	259047 2
25/12	XXX	PSDNN 2525M12	SN.. 1204..	12.8	29	150	259031 20	259015 2	259018 2	259044 2	259047 2

Indexable inserts SNMG

SNMG Finish machining

Grade			HB7010-1	HB7020	HB7035-1	HB7120-1	HB7140-1	HB7415	
21G 25 1142	Garant	SNMG 120404	XXX	XXX	XXX	XXX	XXX	XXX	10
21G 25 1144	Garant	SNMG 120408	XXX	XXX	XXX	XXX	XXX	XXX	10
●			P	P	P	M	M	S	
⚙			◍	◙	◒	◍	◙	◍	
Chip breaker			SS	SS	SS	VS	VS	TIS	
a_p		mm	0.3 – 2						
f		mm/rev.	0.1 – 0.4	0.1 – 0.4	0.1 – 0.4	0.1 – 0.4	0.1 – 0.4	0.1 – 0.2	
v_c main application		m/min	150 – 500	150 – 400	120 – 350	90 – 290	70 – 260	60 – 70	

Grade			PV720	CA510	CA515	CA025P	CA6525	PR005S	PR015S	
25E 25 1162	KYOCERA	SNMG 120404	XXX	XXX	XXX	XXX	XXX	XXX	XXX	10
25E 25 1164	KYOCERA	SNMG 120408	XXX	XXX	XXX	XXX	XXX	XXX	XXX	10
●			P	P	P	P	M	S	S	
⚙			◉	◉	◉	◪	◪	◉	◪	
Chip breaker			PQ	PQ	PQ	PQ	MQ	MQ	MQ	
a_p		mm	0.2 – 2.5	0.2 – 2.5	0.2 – 2.5	0.2 – 2.5	0.5 – 2	0.4 – 1.5	0.4 – 1.5	
f		mm/rev.	0.05 – 0.3	0.13 – 0.4	0.13 – 0.4	0.13 – 0.4	0.05 – 0.25	0.03 – 0.12	0.05 – 0.18	
v_c main application		m/min	110 – 520	180 – 590	105 – 510	105 – 435	60 – 220	30 – 90	25 – 70	

Grade			HBT020	HBT130	
22D 25 1160	HOLEX	SNMG 120404	XXX	XXX	10
●			P	M	
⚙			◪	◪	
Chip breaker			PF	MF	
a_p		mm	0.5 – 2	0.5 – 2	
f		mm/rev.	0.1 – 4	0.15 – 0.45	
v_c main application		m/min	120 – 330	40 – 220	

SNMG Medium machining

Grade			HB7010-1	HB7020	HB7035-1	HB7120-1	HB7140-1	HB7210-1	HB7415	HB725	
21G 25 1222		SNMG 120404	XXX	XXX	XXX	XXX	XXX	–	XXX	–	10
21G 25 1224		SNMG 120408	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	10
21G 25 1225		SNMA 120408	–	–	–	–	–	XXX	–	–	10
21G 25 1226		SNMG 120412	XXX	XXX	XXX	XXX	XXX	XXX	–	XXX	10
21G 25 1228	Garant	SNMA 120412	–	–	–	–	–	XXX	–	–	10
21G 25 1230		SNMG 150608	XXX	XXX	XXX	XXX	XXX	–	–	–	10
21G 25 1232		SNMG 150612	XXX	XXX	XXX	XXX	XXX	–	–	–	10
21G 25 1236		SNMG 190612	XXX	XXX	XXX	XXX	XXX	–	–	–	10
21G 25 1238		SNMG 190616	XXX	XXX	XXX	XXX	XXX	–	–	–	10
●			P	P	P	M	M	K	S	UNI	
⚙			◉	◪	◔	◉	◪	◪	◉	◪	
Chip breaker (25 1222, 25 1224, 25 1226, 25 1230, 25 1232, 25 1236, 25 1238)			SM	SM	SM	VM	VM	GM	TIM	UM	
a_p		mm	0.5 – 6	0.5 – 6	0.5 – 6	0.5 – 4	0.5 – 4	0.4 – 6.5	1 – 4	0.5 – 5	
f		mm/rev.	0.15 – 0.5	0.15 – 0.5	0.15 – 0.5	0.1 – 0.4	0.1 – 0.4	0.3 – 0.7	0.1 – 0.25	0.2 – 0.6	
v_c main application		m/min	120 – 440	120 – 350	100 – 320	80 – 260	60 – 230	100 – 450	50 – 70	50 – 250	

Grade			PV720	CA510	CA515	CA025P	CA6525	CA4515	
25E 25 1253	KYOCERA	SNMG 120404	–	–	–	–	XXX	–	10
25E 25 1254	KYOCERA	SNMG 120408	XXX	XXX	XXX	XXX	XXX	XXX	10
●			P	P	P	P	M	K	
⚙			◉	◉	◉	◪	◪	◪	
Chip breaker			PG	PS	PS	PS	MS (brass)	STD	
a_p		mm	1 – 4	1 – 4	1 – 4	1 – 4	0.8 – 4	0.5 – 5	
f		mm/rev.	0.15 – 0.6	0.15 – 0.6	0.15 – 0.6	0.15 – 0.6	0.1 – 0.35	0.05 – 0.7	
v_c main application		m/min	110 – 490	80 – 450	70 – 435	70 – 420	60 – 220	110 – 360	

Grade			HBT020	HBT130	
22D 25 1266	HOLEX	SNMG 120404	XXX	XXX	10
22D 25 1267	HOLEX	SNMG 120408	XXX	XXX	10
●			P	M	
⚙			◙	◙	
Chip breaker			PM	MM	
a_p		mm	0.8 – 5	0.5 – 5	
f		mm/rev.	0.1 – 0.45	0.12 – 0.45	
v_c main application		m/min	100 – 280	40 – 220	

SNMG Rough machining

Grade			HB7010-1	HB7020	HB7035-1	HB7120-1	HB7140-1	HB7210-1	
21G 25 1324		SNMG 120408	XXX	XXX	XXX	XXX	XXX	–	10
21G 25 1326		SNMG 120412	XXX	XXX	XXX	XXX	XXX	XXX	10
21G 25 1330	Garant	SNMG 150612	XXX	XXX	XXX	XXX	XXX	XXX	10
21G 25 1332		SNMG 150616	XXX	XXX	XXX	XXX	XXX	–	10
21G 25 1336		SNMG 190616	XXX	XXX	XXX	XXX	XXX	XXX	10
21G 25 1338		SNMG 190624	XXX	XXX	XXX	XXX	XXX	–	10
●			P	P	P	M	M	K	
⚙			◙	◙	◙	◙	◙	◙	
Chip breaker			SG	SG	SG	VG	VG	GG	
a_p		mm	1.5 – 9	1.5 – 9	1.5 – 9	1.5 – 9	1.5 – 9	0.4 – 6.5	
f		mm/rev.	0.25 – 0.8	0.25 – 0.8	0.25 – 0.8	0.25 – 0.8	0.25 – 0.8	0.32 – 0.8	
v_c main application		m/min	100 – 375	100 – 300	90 – 260	70 – 240	50 – 210	100 – 450	

Grade			CA510	CA515	CA025P	
25E 25 1356		SNMG 120408	XXX	XXX	XXX	10
25E 25 1363	KYOCERA	SNMG 150612	XXX	XXX	XXX	10
25E 25 1368		SNMG 190612	–	–	XXX	10
●			P	P	P	
⚙			◙	◙	◙	
Chip breaker				PH		
a_p		mm		1 – 10		
f		mm/rev.		0.25 – 0.8		
v_c main application		m/min	80 – 450	70 – 435	70 – 420	

Grade			HBT020	HBT130	
22D 25 1396	HOLEX	SNMG 120408	XXX	XXX	10
●			P	M	
⚙			◙	◙	
Chip breaker			PR	MR	
a_p		mm	1.8 – 6	2 – 6	
f		mm/rev.	0.2 – 0.6	0.15 – 0.55	
v_c main application		m/min	80 – 260	40 – 220	

SNMM rough machining

Grade			HB7010-1	HB7020	HB7035-1	HB7120-1	HB7140-1	
21G 25 1386		SNMM 120412	XXX	XXX	XXX	XXX	XXX	10
21G 25 1390	Garant	SNMM 150616	XXX	XXX	XXX	XXX	XXX	10
21G 25 1394		SNMM 190624	XXX	XXX	XXX	XXX	XXX	10
●			P	P	P	M	M	
⚙			◙	◙	◙	◙	◙	
Chip breaker			SR	SR	SR	VR	VR	
a_p		mm			2 – 12			
f		mm/rev.			0.4 – 1.2			
v_c main application		m/min	100 – 375	100 – 300	90 – 260	60 – 210	40 – 180	

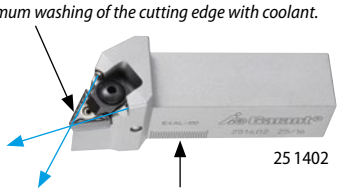
DIN ISO 5610

MTJN 93° eco-clamping toolholder for indexable inserts TN..

With internal coolant feed right to the cutting edge. Cooling by means of precision nozzles effectively and efficiently reduces the thermal loading, since the coolant stream is optimally directed between the chip and cutting edge. This results in higher productivity, longer tool life and higher process reliability.

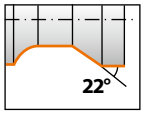
Note: Coolant transfer only in conjunction with GARANT eco-system toolholders No. 317900 – 319886.

Optimum washing of the cutting edge with coolant.



25 1402

Positioning within the scale ensures precise coolant transfer.

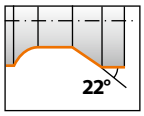


Shank / insert size	21U 25 1402	21U 25 1403	ISO code toolholder	suitable indexable insert				Screw set	Shim	Clamping claw	Pin
	eco clamping toolholder										
mm	right-hand	left-hand			mm	mm	mm				
20/16	XXX	XXX	MTJNR/L 2020X16	TN.. 1604..	25	32	91	259023 1	259031 31	259038 1	259049 1
25/16	XXX	XXX	MTJNR/L 2525X16	TN.. 1604..	32	32	103.5	259023 1	259031 31	259038 1	259049 1

DIN ISO 5610

MTJN 93° clamping toolholder for indexable inserts TN..

25 1406

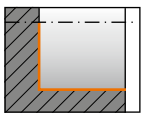


Shank / insert size	21T 25 1406	21T 25 1407	ISO code toolholder	suitable indexable insert				Screw set	Shim	Clamping claw	Pin
	Clamping toolholder										
mm	right-hand	left-hand			mm	mm	mm				
20/16	XXX	XXX	MTJNR/L 2020K16	TN.. 1604..	25	31	125	259023 2	259031 32	259038 14	259049 6
25/16	XXX	XXX	MTJNR/L 2525M16	TN.. 1604..	32	36	150	259023 2	259031 32	259038 14	259049 6
25/22	XXX	XXX	MTJNR/L 2525M22	TN.. 2204..	32	36	150	259023 2	259031 33	259038 13	259049 2
32/22	XXX	XXX	MTJNR/L 3232P22	TN.. 2204..	40	36	170	259023 2	259031 33	259038 13	259049 2

3×D DIN 8024

A..PTFN 90° boring bars for indexable inserts TN..

25 1416



Shank ∅ / insert size	21T 25 1416	21T 25 1417	ISO code toolholder	suitable indexable insert					Shim	Lever	Lever screw	Shim pins pack	Shim punches pack
	Boring bar, steel				∅ D_{min}								
mm	right-hand	left-hand			mm	mm	mm	mm					
25/16	XXX	XXX	A25R PTFNR/L 16	TN.. 1604..	32	17	24	200	259031 34	259015 9	259018 6	259044 5	259047 3
32/16	XXX	XXX	A32S PTFNR/L 16	TN.. 1604..	40	22	31	250	259031 34	259015 9	259018 6	259044 5	259047 3
32/22	XXX	XXX	A32S PTFNR/L 22	TN.. 2204..	40	22	31	250	259031 10	259015 2	259018 2	259044 2	259047 2
40/22	XXX	XXX	A40T PTFNR/L 22	TN.. 2204..	50	27	38.5	300	259031 10	259015 2	259018 2	259044 2	259047 2

Indexable inserts TN.G

TNMG Finish machining

Grade			HB7010-1	HB7020	HB7035-1	HB7120-1	HB7140-1	HB7415	
21G 25 1432	Garant	TNMG 160404	XXX	XXX	XXX	XXX	XXX	XXX	10
21G 25 1433	Garant	TNMG 160404 wiper	–	XXX	–	–	–	–	10
21G 25 1434	Garant	TNMG 160408	XXX	XXX	XXX	XXX	XXX	XXX	10
21G 25 1435	Garant	TNMG 160408 wiper	–	XXX	–	–	–	–	10
●			P	P	P	M	M	S	
⚙									
Chip breaker (25 1432, 25 1434)			SS	SS	SS	VS	VS	TIS	
Chip breaker (25 1433, 25 1435)			–	WSS	–	–	–	–	
a_p		mm	0.3 – 2	0.3 – 2	0.3 – 2	0.3 – 2	0.3 – 2	0.5 – 2	
f		mm/rev.	0.1 – 0.4	0.1 – 0.4	0.1 – 0.4	0.1 – 0.4	0.1 – 0.4	0.1 – 0.2	
v_c main application		m/min	150 – 500	150 – 400	120 – 350	90 – 290	70 – 260	60 – 70	

Grade			PV720	CA510	CA515	CA025P	CA6525	PR005S	PR015S	
25E 25 1472	KYOCERA	TNMG 160404	XXX	XXX	XXX	XXX	XXX	XXX	XXX	10
25E 25 1474	KYOCERA	TNMG 160408	XXX	XXX	XXX	XXX	XXX	XXX	XXX	10
●			P	P	P	P	M	S	S	
⚙										
Chip breaker			PQ	PQ	PQ	PQ	MQ	MQ	MQ	
a_p		mm	0.2 – 2.5	0.2 – 2.5	0.2 – 2.5	0.2 – 2.5	0.3 – 2	0.2 – 1.5	0.2 – 1.5	
f		mm/rev.	0.05 – 0.3	0.13 – 0.4	0.13 – 0.4	0.13 – 0.4	0.05 – 0.25	0.03 – 0.25	0.05 – 0.18	
v_c main application		m/min	110 – 520	180 – 590	105 – 510	105 – 435	60 – 220	30 – 90	25 – 70	

Grade			HBT020	HBT130	
22D 25 1414	HOLEX	TNMG 160404	XXX	XXX	10
●			P	M	
⚙					
Chip breaker			PF	MF	
a_p		mm	0.5 – 2		
f		mm/rev.	0.1 – 0.4	0.15 – 0.45	
v_c main application		m/min	120 – 330	40 – 220	

TN.G Medium machining

Grade			HB7010-1	HB7020	HB7035-1	HB7120-1	HB7140-1	HB7210-1	HU7305	HB7410-1	HB7415	HB725	
21G 25 1542	Garant	TN.G 160404	XXX	XXX	XXX	XXX	XXX	–	XXX	XXX	XXX	XXX	10
21G 25 1544	Garant	TNMG 160408	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	10
21G 25 1545	Garant	TNMG 160408 wiper	–	XXX	–	–	–	–	–	–	–	–	10
21G 25 1546	Garant	TNMA 160408	–	–	–	–	–	XXX	–	–	–	–	10
21G 25 1547	Garant	TNMG 160412 wiper	–	XXX	–	–	–	–	–	–	–	–	10
●			P	P	P	M	M	K	N	Ti	S	UNI	
⚙													
Chip breaker (25 1542, 25 1544)			SM	SM	SM	VM	VM	GM	AM	TAM	TIM	UM	
Chip breaker (25 1545, 25 1547)			–	WSM	–	–	–	–	–	–	–	–	
Tolerance			M	M	M	M	M	M	G	G	M	M	
a_p		mm	0.5 – 5	0.5 – 5	0.5 – 5	0.5 – 5	0.5 – 5	0.4 – 6.5	0.5 – 5	0.5 – 3	1 – 4	0.5 – 5	
f		mm/rev.	0.2 – 0.5	0.2 – 0.5	0.2 – 0.5	0.2 – 0.5	0.2 – 0.5	0.3 – 0.7	0.1 – 0.6	0.1 – 0.3	0.1 – 0.25	0.2 – 0.6	
v_c main application		m/min	120 – 440	120 – 350	100 – 320	80 – 260	60 – 230	100 – 450	400 – 600	60 – 90	50 – 70	50 – 250	

Grade			PV720	CA510	CA515	CA025P	CA6525	CA4515	KW10	PR005S	PR015S	SW05	
25E 25 1582	KYOCERA	TNMG 160404	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	10
25E 25 1583	KYOCERA	TNMG 160408	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	10
25 1586	KYOCERA	TNMG 220404	–	XXX	XXX	XXX	–	XXX	–	–	–	–	10
25 1587	KYOCERA	TNMG 220408	–	XXX	XXX	XXX	–	XXX	–	–	–	–	10
●			P	P	P	P	M	K	N	S	S	Ti	
⚙													
Chip breaker			PG	PS	PS	PS	MS	STD	AH	MU	MU	MU	
a_p		mm	1 – 4.5	1 – 4.5	1 – 4.5	1 – 4.5	0.8 – 4	0.5 – 5	1 – 4	0.5 – 3.5	0.5 – 3.5	0.5 – 2.5	
f		mm/rev.	0.15 – 0.6	0.15 – 0.6	0.15 – 0.6	0.15 – 0.6	0.1 – 0.35	0.05 – 0.7	0.1 – 0.35	0.05 – 0.15	0.05 – 0.18	0.1 – 0.35	
v_c main application		m/min	110 – 490	80 – 450	70 – 435	70 – 420	60 – 220	110 – 360	60 – 400	30 – 90	25 – 70	50 – 140	

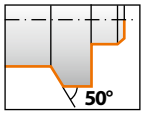
Grade			HBT020	HBT130	
22D 25 1564	HOLEX	TNMG 160404	XXX	XXX	10
22D 25 1565	HOLEX	TNMG 160408	XXX	XXX	10
●			P	M	
⚙					
Chip breaker			PM	MM	
a_p		mm	0.8 – 5	0.5 – 5	
f		mm/rev.	0.1 – 0.45	0.12 – 0.45	
v_c main application		m/min	100 – 280	40 – 220	

DIN ISO 5610

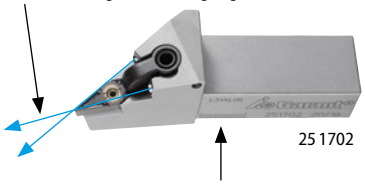
MVJN 93° eco clamping toolholder for indexable inserts VN..

With internal coolant feed right to the cutting edge. Cooling by means of precision nozzles effectively and efficiently reduces the thermal loading, since the coolant stream is optimally directed between the chip and cutting edge. This results in higher productivity, longer tool life and higher process reliability.

Note: Coolant transfer only in conjunction with GARANT eco-system toolholders No. 317900 – 319886.



Optimum washing of the cutting edge with coolant.



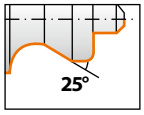
25 1702

Positioning within the scale ensures precise coolant transfer.

Shank / insert size	21U 25 1702	21U 25 1703	ISO code toolholder	suitable indexable insert				Shim	Shim screw	Clamping claw	Screw for clamping claw
	eco clamping toolholder										
mm	right-hand	left-hand			mm	mm	mm				
20/16	XXX	XXX	MVJNR/L 2025X16	VN.. 1604..	32	46	105	259031 1	259025 9	259038 3	259021 2
25/16	XXX	XXX	MVJNR/L 2525X16	VN.. 1604..	32	46	117.5	259031 1	259025 9	259038 3	259021 2

DIN ISO 5610

MVPN 117.5° clamping toolholder for indexable inserts VN..

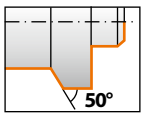


25 1708

Shank / insert size	21T 25 1708	21T 25 1709	ISO code toolholder	suitable indexable insert				Shim	Shim screw	Clamping claw	Screw for clamping claw
	Clamping toolholder										
mm	right-hand	left-hand			mm	mm	mm				
20/16	XXX	XXX	MVPNR/L 2020K16	VN.. 1604..	25	41	125	259031 39	259025 3	259038 2	259021 1
25/16	XXX	XXX	MVPNR/L 2525M16	VN.. 1604..	32	41	150	259031 39	259025 3	259038 2	259021 1
32/16	XXX	XXX	MVPNR/L 3232P16	VN.. 1604..	40	40	170	259031 39	259025 3	259038 2	259021 1

DIN ISO 5610

MVJN 93° clamping toolholder for indexable inserts VN..

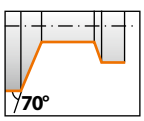


25 1706

Shank / insert size	21T 25 1706	21T 25 1707	ISO code toolholder	suitable indexable insert				Shim	Shim screw	Clamping claw	Screw for clamping claw
	Clamping toolholder										
mm	right-hand	left-hand			mm	mm	mm				
20/16	XXX	XXX	MVJNR/L 2020K16	VN.. 1604..	25	32	125	259031 39	259025 3	259038 2	259021 1
25/16	XXX	XXX	MVJNR/L 2525M16	VN.. 1604..	32	32	150	259031 39	259025 3	259038 2	259021 1
32/16	XXX	XXX	MVJNR/L 3225P16	VN.. 1604..	32	32	170	259031 39	259025 3	259038 2	259021 1

DIN ISO 5610

MVVNN clamping toolholder for indexable inserts VN..

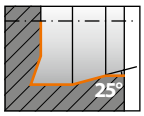


25 1712

Shank / insert size	21T 25 1712	ISO code toolholder	suitable indexable insert				Shim	Shim screw	Clamping claw	Screw for clamping claw
	Clamping toolholder									
mm	neutral			mm	mm	mm				
20/16	XXX	MVVNN 2020K16	VN.. 1604..	10	45	125	259031 39	259025 3	259038 2	259021 1
25/16	XXX	MVVNN 2525M16	VN.. 1604..	12.5	45	150	259031 39	259025 3	259038 2	259021 1
32/16	XXX	MVVNN 3225P16	VN.. 1604..	12.5	45	170	259031 39	259025 3	259038 2	259021 1

3×D | DIN 8024

A..MVPN 117.5° boring bars for indexable inserts VN..

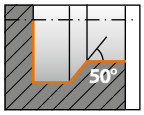


25 1720

Shank ∅ / insert size	21T 25 1720	21T 25 1721	ISO code toolholder	suitable indexable insert	∅ D_{min}				Shim	Shim screw	Clamping claw	Screw for clamp
	Boring bar, steel											
mm	right-hand	left-hand			mm	mm	mm	mm				
25/16	XXX	XXX	A25R MVPNR/L 16	VN.. 1604..	32	17	24	200	259031 39	259025 3	259038 4	259021 4
32/16	XXX	XXX	A32S MVPNR/L 16	VN.. 1604..	40	22	31	250	259031 39	259025 3	259038 2	259021 4
40/16	XXX	XXX	A40T MVPNR/L 16	VN.. 1604..	50	27	38.5	300	259031 39	259025 3	259038 2	259021 1

3×D | DIN 8024

A..MVUN 93° boring bars for indexable inserts VN..

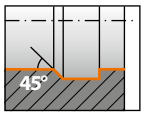


25 1724

Shank ∅ / insert size	21T 25 1724	21T 25 1725	ISO code toolholder	suitable indexable insert	∅ D_{min}				Shim	Shim screw	Clamping claw	Screw for clamp
	Boring bar, steel											
mm	right-hand	left-hand			mm	mm	mm	mm				
25/16	XXX	XXX	A25R MVUNR/L 16	VN.. 1604..	32	17	24	200	259031 39	259025 3	259038 4	259021 4
32/16	XXX	XXX	A32S MVUNR/L 16	VN.. 1604..	40	22	31	250	259031 39	259025 3	259038 4	259021 4
40/16	XXX	XXX	A40T MVUNR/L 16	VN.. 1604..	50	27	38.5	300	259031 39	259025 3	259038 4	259021 1

3×D | DIN 8024

A..MVZN 95° boring bars for indexable inserts VN..



25 1728

Shank ∅ / insert size	21T 25 1728	21T 25 1729	ISO code toolholder	suitable indexable insert	∅ D_{min}				Shim	Shim screw	Clamping claw	Screw for clamp
	Boring bar, steel											
mm	right-hand	left-hand			mm	mm	mm	mm				
32/16	XXX	XXX	A32S MVZNR/L 16	VN.. 1604..	48	30	31	250	259031 39	259025 3	259038 2	259021 4
40/16	XXX	XXX	A40T MVZNR/L 16	VN.. 1604..	57	35	38.5	300	259031 39	259025 3	259038 2	259021 4

Indexable inserts VN.G

VNMG Finish machining

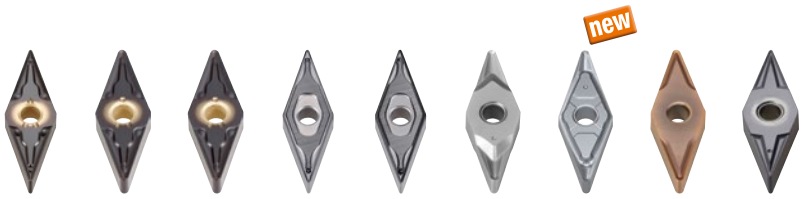
Grade		HB7010-1	HB7020	HB7035-1	HB7120-1	HB7140-1	HB7415	
21G 25 1732	VNMG 160404	XXX	XXX	XXX	XXX	XXX	XXX	10
21G 25 1734	VNMG 160408	XXX	XXX	XXX	XXX	XXX	XXX	10
●		P	P	P	M	M	S	
⚙		●	■	◆	●	■	●	
Chip breaker		SS	SS	SS	VS	VS	TIS	
a_p	mm	0.3 – 2						
f	mm/rev.	0.08 – 0.4	0.08 – 0.4	0.08 – 0.4	0.05 – 0.4	0.05 – 0.4	0.05 – 0.2	
v_c main application	m/min	150 – 500	150 – 400	120 – 350	90 – 290	70 – 260	60 – 70	

Grade			PV720	CA510	CA515	CA025P	CA6525	PR005S	PR015S	SW05	
25E 25 1752	KYOCERA	VNMG 160404	XXX	XXX	XXX	(XXX)	XXX	(XXX)	(XXX)	XXX	10
25E 25 1754	KYOCERA	VNMG 160408	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	10
●			P	P	P	P	M	S	S	Ti	
⚙			●	●	●	◪	◪	●	◪	●	
Chip breaker			PQ	PQ	PQ	PQ	MQ	MQ	MQ	MQ	
a_p		mm	0.2 – 2.5	0.2 – 2.5	0.2 – 2.5	0.2 – 2.5	0.5 – 1.5	0.2 – 1.5	0.2 – 1.5	0.2 – 1	
f		mm/rev.	0.05 – 0.3	0.13 – 0.4	0.13 – 0.4	0.13 – 0.4	0.05 – 0.25	0.03 – 0.12	0.05 – 0.18	0.05 – 0.3	
v_c main application		m/min	110 – 520	180 – 590	105 – 510	105 – 435	60 – 220	30 – 90	25 – 70	50 – 140	

Grade			HBT020	HBT130	
22D 25 1772	HOLEX	VNMG 160404	XXX	XXX	10
●			P	M	
⚙			◪	◪	
Chip breaker			PF	M	
a_p		mm	0.5 – 2		
f		mm/rev.	0.1 – 0.4	0.15 – 0.45	
v_c main application		m/min	120 – 330	40 – 220	

_HBT020 _HBT130

VN.G Medium machining



Grade			HB7010-1	HB7020	HB7035-1	HB7120-1	HB7140-1	HU7305	HB7410-1	HB7415	HB725	
21G 25 1802	Garant	VN.G 160404	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	10
21G 25 1804	Garant	VN.G 160408	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	10
●			P	P	P	M	M	N	Ti	S	UNI	
⚙			●	◪	◪	●	◪	◪	●	●	◪	
Chip breaker			SM	SM	SM	VM	VM	AM	TAM	TIM	UM	
Tolerance			M	M	M	M	M	G	G	M	M	
a_p		mm	0.5 – 4	0.5 – 4	0.5 – 4	0.5 – 4	0.5 – 4	0.5 – 5	0.5 – 2.5	1 – 4	0.5 – 5	
f		mm/rev.	0.1 – 0.5	0.1 – 0.5	0.1 – 0.5	0.1 – 0.5	0.1 – 0.5	0.1 – 0.6	0.1 – 0.3	0.1 – 0.25	0.2 – 0.6	
v_c main application		m/min	120 – 440	120 – 350	100 – 320	80 – 260	60 – 230	400 – 600	50 – 70	50 – 70	50 – 250	

Grade			CA6525	CA4515	PR005S	PR015S	SW05	
25E 25 1822		VNMG 160404	–	XXX	XXX	XXX	–	10
25E 25 1824	KYOCERA	VNMG 160408	XXX	XXX	XXX	XXX	XXX	10
25E 25 1826		VNMG 160412	XXX	–	–	–	–	10
●			M	K	S	S	Ti	
⚙			◪	◪	●	◪	●	
Chip breaker			MS (brass)	STD	MU	MU	MU	
a_p		mm	0.75 – 2.5	0.75 – 3	0.5 – 4	0.5 – 4	0.5 – 3	
f		mm/rev.	0.1 – 0.35	0.05 – 0.7	0.05 – 0.15	0.05 – 0.18	0.1 – 0.35	
v_c main application		m/min	60 – 220	110 – 360	30 – 90	25 – 70	50 – 140	

Grade			HBT020	HBT130	
22D 25 1828	HOLEX	VNMG 160404	XXX	XXX	10
22D 25 1829	HOLEX	VNMG 160408	XXX	XXX	10
●			P	M	
⚙			◪	◪	
Chip breaker			PM	MM	
a_p		mm	0.8 – 4	0.5 – 4	
f		mm/rev.	0.1 – 0.45	0.12 – 0.45	
v_c main application		m/min	100 – 280	40 – 220	

_HBT020 _HBT130

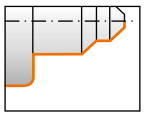
DIN ISO 5610

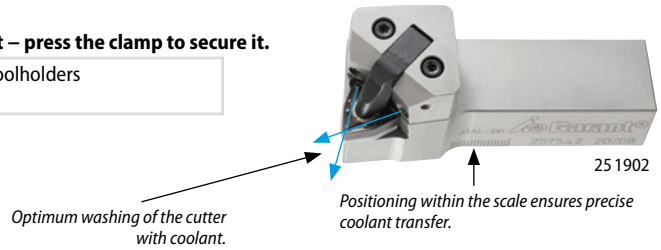
DWLN 95° eco QT clamping toolholder for WN.. indexable inserts.

With internal coolant feed right to the cutting edge. Cooling by means of precision nozzles effectively and efficiently reduces the thermal loading, since the coolant stream is optimally directed between the chip and cutting edge. This results in higher productivity, longer tool life and higher process reliability.

Advantage: Inserts can be changed without using tools.
Release the stop at the push of a button – change the insert – press the clamp to secure it.

Note: Coolant transfer only in conjunction with GARANT eco-system toolholders No. 317900 – 319886.





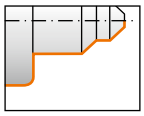
Shank / insert size	21U 25 1902	21U 25 1903	ISO code toolholder	suitable indexable insert				Shim	Shim screw	Clamp	
	eco QT clamping toolholder									25 1902	25 1903
mm	right-hand	left-hand			mm	mm	mm				
20/08	XXX	XXX	DWLNR/L 2025X08	WN.. 0804..	32	32	91	259031 19	259025 1	259038 9	259038 10
25/08	XXX	XXX	DWLNR/L 2525X08	WN.. 0804..	32	32	103.5	259031 19	259025 1	259038 9	259038 10

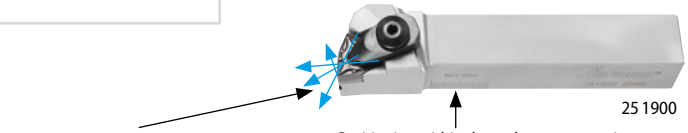
DIN ISO 5610

.WLN 95° eco clamping toolholder for indexable inserts WN..

With internal coolant feed right to the cutting edge. Cooling by means of precision nozzles effectively and efficiently reduces the thermal loading, since the coolant stream is optimally directed between the chip and cutting edge. This results in higher productivity, longer tool life and higher process reliability.

Note: Coolant transfer only in conjunction with GARANT eco-system toolholders No. 317900 – 319886.





Clamping with adjustable clamp

Shank size / insert size	21U 25 1908	21U 25 1909	ISO code toolholder	suitable indexable insert				Shim	Shim screw	Clamp, screw, spring	
	eco clamping toolholder, short									25 1908	25 1909
mm	right-hand	left-hand			mm	mm	mm				
16/06	XXX	XXX	DWLNR/L 1616X06	WN.. 0604..	20	27	74	259033 8	259027 1	259036 12	259036 13
20/08	XXX	XXX	DWLNR/L 2020X08	WN.. 0804..	25	32	92	259033 6	259027 4	259036 10	259036 9
25/08	XXX	XXX	DWLNR/L 2525X08	WN.. 0804..	32	32	104.5	259033 6	259027 4	259036 10	259036 9

Shank / insert size	21U 25 1900	21U 25 1901	ISO code toolholder	suitable indexable insert				Shim	Shim screw	Clamp, screw, spring	
	eco clamping toolholder									25 1900	25 1901
mm	right-hand	left-hand			mm	mm	mm				
16/06	XXX	XXX	DWLNR/L 1616H06	WN.. 0604..	20	27	100	259033 8	259027 1	259036 12	259036 13
20/08	XXX	XXX	DWLNR/L 2020K08	WN.. 0804..	25	32	125	259033 6	259027 4	259036 10	259036 9
25/08	XXX	XXX	DWLNR/L 2525M08	WN.. 0804..	32	32	150	259033 6	259027 4	259036 10	259036 9

Clamping with toggle lever

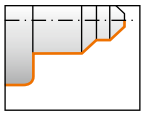
Shank / insert size	21U 25 1904	21U 25 1905	ISO code toolholder	suitable indexable insert				Shim	Lever	Lever screw	Spring
	eco lever lock toolholder, short										
mm	right-hand	left-hand			mm	mm	mm				
16/06	XXX	XXX	PWLNR/L 1620X06	WN.. 0604..	25	30	77	259031 9	259015 6	259018 4	259046 2
20/06	XXX	XXX	PWLNR/L 2020X06	WN.. 0604..	25	30	89	259031 9	259015 6	259018 4	259046 2
25/06	XXX	XXX	PWLNR/L 2525X06	WN.. 0604..	32	30	101.5	259031 9	259015 6	259018 4	259046 2
16/08	XXX	XXX	PWLNR/L 1620X08	WN.. 0804..	25	34	81	259031 19	259015 3	259018 3	259046 1
20/08	XXX	XXX	PWLNR/L 2020X08	WN.. 0804..	25	34	93	259031 19	259015 3	259018 3	259046 1
25/08	XXX	XXX	PWLNR/L 2525X08	WN.. 0804..	32	34	105.5	259031 19	259015 3	259018 3	259046 1

DIN ISO 5610

Garant DWLN 95° QuickTurn clamping toolholders for indexable inserts WN..

Advantage: Inserts can be changed without using tools. **Release the stop at the push of a button – change the insert – press the clamp to secure it.**
A simple and convenient way to reduce non-productive times.
Consistent clamping force, high interchange accuracy, maintenance-free.

25 1906

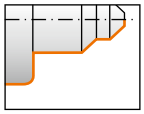


Shank / insert size	21U 25 1906	21U 25 1907	ISO code toolholder	suitable indexable insert				Shim	Shim screw	Clamp	
	QuickTurn clamping toolholder									25 1906	25 1907
mm	right-hand	left-hand			mm	mm	mm				
20/08	XXX	XXX	DWLNR/L 2020K08	WN.. 0804..	25	32	125	259031 42	259025 4	259038 9	259038 10
25/08	XXX	XXX	DWLNR/L 2525M08	WN.. 0804..	32	32	150	259031 42	259025 4	259038 9	259038 10

DIN ISO 5610

Garant MWLN 95° clamping toolholder for indexable inserts WN..

25 1912

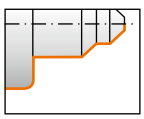


Shank / insert size	21T 25 1912	21T 25 1913	ISO code toolholder	suitable indexable insert				Screw set	Shim	Clamping claw	Pin
	Clamping toolholder										
mm	right-hand	left-hand			mm	mm	mm				
20/08	XXX	XXX	MWLNR/L 2020K08	WN.. 0804..	25	28	125	259023 2	259031 41	259038 12	259049 2
25/08	XXX	XXX	MWLNR/L 2525M08	WN.. 0804..	32	31	150	259023 2	259031 41	259038 12	259049 2
32/08	XXX	XXX	MWLNR/L 3232P08	WN.. 0804..	40	32	170	259023 2	259031 41	259038 12	259049 2

DIN ISO 5610

Garant PWLN 95° lever lock toolholder for indexable inserts WN..

25 1916



Shank / insert size	21T 25 1916	21T 25 1917	ISO code toolholder	suitable indexable insert				Shim	Lever	Lever screw	Shim pins pack	Shim punches pack
	Lever lock toolholder											
mm	right-hand	left-hand			mm	mm	mm					
16/06	XXX	XXX	PWLNR/L 1616H06	WN.. 0604..	20	16	100	259031 25	259015 9	259018 6	259044 5	259047 3
20/06	XXX	XXX	PWLNR/L 2020K06	WN.. 0604..	25	16	125	259031 25	259015 9	259018 6	259044 5	259047 3
25/06	XXX	XXX	PWLNR/L 2525M06	WN.. 0604..	32	16	150	259031 25	259015 9	259018 6	259044 5	259047 3
16/08	XXX	XXX	PWLNR/L 1616H08	WN.. 0804..	25	20	100	259031 40	259018 8	259018 2	259044 2	259047 2
20/08	XXX	XXX	PWLNR/L 2020K08	WN.. 0804..	25	20	125	259031 40	259015 2	259018 2	259044 2	259047 2
25/08	XXX	XXX	PWLNR/L 2525M08	WN.. 0804..	32	21	150	259031 40	259015 2	259018 2	259044 2	259047 2
32/08	XXX	XXX	PWLNR/L 3232 P08	WN.. 0804..	40	23	170	259031 40	259015 2	259018 2	259044 2	259047 2

3×D | DIN 8024

A..MWLN 95° boring bars for indexable inserts WN..

25 1936

Shank Ø / insert size	21T 25 1936	21T 25 1937	ISO code toolholder	suitable indexable insert	⌀ D_{min}				Screw set	Shim	Clamping claw	Pin
	Boring bar, steel											
mm	right-hand	left-hand			mm	mm	mm	mm				
25/08	XXX	XXX	A25R MWLNR/L08	WN.. 0804..	32	17	24	200	259023 3	259031 41	259038 12	259049 3
32/08	XXX	XXX	A32S MWLNR/L08	WN.. 0804..	40	22	31	250	259023 3	259031 41	259038 12	259049 3
40/08	XXX	XXX	A40T MWLNR/L08	WN.. 0804..	50	27	38.5	300	259023 3	259031 41	259038 12	259049 3

3×D | DIN 8024

A..PWLN 95° boring bars for indexable inserts WN..

25 1942

Shank Ø / insert size	21T 25 1942	21T 25 1943	ISO code toolholder	suitable indexable insert	⌀ D_{min}				Shim	Lever	Lever screw	Shim pins pack	Shim punches pack
	Boring bar, steel												
mm	right-hand	left-hand			mm	mm	mm	mm					
16/06	XXX	XXX	A16M PWLNR/L06	WN.. 0604..	21	11	15.25	150	–	259015 14	259018 10	–	–
20/06	XXX	XXX	A20Q PWLNR/L06	WN.. 0604..	25	13	19	180	–	259015 14	259018 10	–	–
25/08	XXX	XXX	A25R PWLNR/L08	WN.. 0804..	32	17	24	200	259031 40	259015 2	259018 8	259044 2	259047 2
32/08	XXX	XXX	A32S PWLNR/L08	WN.. 0804..	40	22	31	250	259031 40	259015 2	259018 2	259044 2	259047 2

Indexable inserts WN.G

WNMG Finish machining

Grade			HB7010-1	HB7020	HB7035-1	HB7120-1	HB7140-1	HB7415	
21G 25 1952		WNMG 060404	XXX	XXX	XXX	XXX	XXX	XXX	10
21G 25 1953		WNMG 060404 wiper	–	XXX	–	–	–	–	10
21G 25 1954		WNMG 060408	XXX	XXX	XXX	XXX	XXX	XXX	10
21G 25 1955		WNMG 060408 wiper	–	XXX	–	–	–	–	10
21G 25 1962	Garant	WNMG 080404	XXX	XXX	XXX	XXX	XXX	XXX	10
21G 25 1963		WNMG 080404 wiper	–	XXX	–	–	–	–	10
21G 25 1964		WNMG 080408	XXX	XXX	XXX	XXX	XXX	XXX	10
21G 25 1965		WNMG 080408 wiper	–	XXX	–	–	–	–	10
21G 25 1967		WNMG 080412 wiper	–	XXX	–	–	–	–	10
●			P	P	P	M	M	S	
⚙			◍	◍	◍	◍	◍	◍	
Chip breaker (25 1952, 25 1954, 25 1962, 25 1964)			SS	SS	SS	VS	VS	TIS	
Chip breaker (25 1953, 25 1955, 25 1963, 25 1965, 25 1967)			–	WSS	–	–	–	–	
a_p		mm	0.3 – 2						
f		mm/rev.	0.1 – 0.4	0.1 – 0.4	0.1 – 0.4	0.1 – 0.4	0.1 – 0.4	0.1 – 0.2	
v_c main application		m/min	150 – 500	150 – 400	120 – 350	90 – 290	70 – 260	60 – 70	

Grade			PV720	CA510	CA515	CA025P	CA6525	PR005S	PR015S	SW05	
25E 25 2012	KYOCERA	WNMG 080404	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	10
25E 25 2013	KYOCERA	WNMG 080404 wiper	–	XXX	XXX	XXX	–	–	–	–	10
25E 25 2014	KYOCERA	WNMG 080408	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	10
25E 25 2015	KYOCERA	WNMG 080408 wiper	–	XXX	XXX	XXX	–	–	–	–	10
●			P	P	P	P	M	S	S	Ti	
⚙			◍	◍	◍	◪	◪	◍	◪	◍	
Chip breaker (25 2012, 25 2014)			HQ	HQ	HQ	HQ	MQ	MQ	MQ	MQ	
Chip breaker (25 2013, 25 2015)			–	WP	WP	WP	–	–	–	–	
a_p		mm	0.5 – 2	0.5 – 2	0.5 – 2	0.5 – 2	0.3 – 2	0.2 – 1.5	0.2 – 1.5	0.2 – 1	
f		mm/rev.	0.07 – 0.3	0.07 – 0.3	0.07 – 0.3	0.07 – 0.3	0.05 – 0.25	0.03 – 0.13	0.05 – 0.18	0.05 – 0.3	
v_c main application		m/min	110 – 490	80 – 450	70 – 435	70 – 420	60 – 220	30 – 90	25 – 70	50 – 140	

Grade			HBT020	HBT130	
22D 25 1938	HOLEX	WNMG 060404	XXX	XXX	10
22D 25 1939	HOLEX	WNMG 080404	XXX	XXX	10
●			P	M	
⚙			◪	◪	
Chip breaker			PF	M	
a_p		mm	0.5 – 2		
f		mm/rev.	0.1 – 0.4	0.15 – 0.45	
v_c main application		m/min	120 – 330	40 – 220	

WN.G Medium machining

Grade			HB7010-1	HB7020	HB7035-1	HB7120-1	HB7140-1	HB7210-1	HU7305	HB7410-1	HB7415	HB725	HB730-1	
21G 25 2062	Garant	WN.G 060404	XXX	XXX	XXX	XXX	XXX	–	XXX	XXX	XXX	XXX	–	10
21G 25 2064	Garant	WN.G 060408	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	–	10
21G 25 2065	Garant	WNMG 060408 wiper	–	XXX	–	–	–	–	–	–	–	–	–	10
21G 25 2068	Garant	WN.G 080404	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	–	10
21G 25 2070	Garant	WN.G 080408	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	10
21G 25 2071	Garant	WNMG 080408 wiper	–	XXX	–	–	–	–	–	–	–	–	–	10
21G 25 2076	Garant	WNMA 080408	–	–	–	–	–	XXX	–	–	–	–	–	10
21G 25 2072	Garant	WNMG 080412	XXX	XXX	XXX	XXX	XXX	XXX	–	–	XXX	XXX	–	10
21G 25 2073	Garant	WNMG 080412 wiper	–	XXX	–	–	–	–	–	–	–	–	–	10
21G 25 2074	Garant	WNMA 080412	–	–	–	–	–	XXX	–	–	–	–	–	10
●			P	P	P	M	M	K	N	Ti	S	UNI	UNI	
⚙			◍	◪	◒	◍	◪	◪	◪	◍	◍	◪	◪	
Chip breaker (25 2062, 25 2064, 25 2068, 25 2070, 25 2072)			SM	SM	SM	VM	VM	GM	AM	TAM	TIM	UM	XUM	
Chip breaker (25 2065, 25 2071, 25 2073)			–	WSM	–	–	–	–	–	–	–	–	–	
Tolerance			M	M	M	M	M	M	G	G	M	M	M	
a_p		mm	0.5 – 4	0.5 – 4	0.5 – 4	0.5 – 4	0.5 – 4	0.4 – 6.5	0.5 – 5	0.5 – 2.5	1 – 4	0.5 – 5	0.5 – 4.5	
f		mm/rev.	0.2 – 0.5	0.2 – 0.5	0.2 – 0.5	0.1 – 0.5	0.1 – 0.5	0.3 – 0.7	0.1 – 0.6	0.1 – 0.3	0.1 – 0.25	0.2 – 0.6	0.2 – 0.6	
v_c main application		m/min	120 – 440	120 – 350	100 – 320	80 – 260	60 – 230	100 – 450	400 – 600	60 – 90	50 – 70	50 – 250	35 – 230	

Grade			SP4019	SP0819	
28A 25 2082	KENNAMETAL	WNMG 060404	–	XXX	10
28A 25 2084	KENNAMETAL	WNMG 060408	–	XXX	10
28A 25 2090	KENNAMETAL	WNMG 080408	XXX	XXX	10
●			M	S	
○			S	M	
⚙			◍	◍	
Chip breaker			3J	4E	
a_p		mm	1 – 2.5	1 – 3.5	
f		mm/rev.	0.15 – 0.4	0.15 – 0.55	
v_c main application		m/min	120 – 300	30 – 120	
v_c secondary application		m/min	40 – 110	150 – 320	

Grade			PV720	CA510	CA515	CA025P	CA6525	CA4515	KW10	PR005S	PR015S	SW05	
25E 25 2112	KYOCERA	WNMG 080404	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	10
25E 25 2113		WNMG 080404 wiper	–	XXX	XXX	XXX	–	–	–	–	–	–	10
25E 25 2114		WNMG 080408	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	10
25E 25 2115		WNMG 080408 wiper	–	XXX	XXX	XXX	–	–	–	–	–	–	10
25 2116		WNMG 080412	–	XXX	XXX	XXX	XXX	XXX	–	–	–	–	10
25E 25 2117		WNMG 080412 wiper	–	XXX	XXX	XXX	–	–	–	–	–	–	10
25 2118		WNMG 080416	–	XXX	XXX	XXX	–	–	–	–	–	–	10
●			P	P	P	P	M	K	N	S	S	Ti	
⚙			◉	◉	◉	◙	◙	◙	◙	◉	◙	◉	
Chip breaker (25 2112, 25 2114, 25 2116, 25 2118)			PG	PS	PS	PS	MS (brass)	STD	AH	MU	MU	MU	
Chip breaker (25 2113, 25 2115, 25 2117)			–	WQ	WQ	WQ	–	–	–	–	–	–	
a_p		mm	1 – 3.8	1 – 3.8	1 – 3.8	1 – 3.8	0.8 – 4	0.5 – 4.2	1 – 4	0.5 – 3.5	0.5 – 3.5	0.5 – 2.5	
f		mm/rev.	0.15 – 0.6	0.15 – 0.6	0.15 – 0.6	0.15 – 0.6	0.1 – 0.35	0.05 – 0.7	0.1 – 0.35	0.05 – 0.15	0.05 – 0.18	0.1 – 0.35	
v_c main application		m/min	110 – 490	80 – 450	70 – 435	70 – 420	60 – 220	110 – 360	60 – 400	30 – 90	25 – 70	50 – 140	

Grade			HBT020	HBT130	
22D 25 2092	HOLEX	WNMG 080404	XXX	XXX	10
22D 25 2093		WNMG 060408	XXX	XXX	10
22D 25 2094		WNMG 080404	XXX	XXX	10
22D 25 2095		WNMG 080408	XXX	XXX	10
●			P	M	
⚙			◙	◙	
Chip breaker			PM	MM	
a_p		mm	0.8 – 5	0.5 – 5	
f		mm/rev.	0.1 – 0.45	0.12 – 0.45	
v_c main application		m/min	100 – 280	40 – 220	

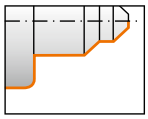
WNMG Rough machining

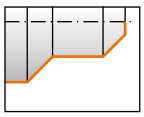
Grade			HB7010-1	HB7020	HB7035-1	HB7120-1	HB7140-1	HB7210-1	
21G 25 2208	Garant	WNMG 080408	XXX	XXX	XXX	XXX	XXX	XXX	10
21G 25 2210		WNMG 080412	XXX	XXX	XXX	XXX	XXX	–	10
●			P	P	P	M	M	K	
⚙			◉	◙	◡	◉	◙	◙	
Chip breaker			SG	SG	SG	VG	VG	GG	
a_p		mm	1.5 – 6	1.5 – 6	1.5 – 6	1.5 – 6	1.5 – 6	0.4 – 6.5	
f		mm/rev.	0.25 – 0.6	0.25 – 0.6	0.25 – 0.6	0.25 – 0.6	0.25 – 0.6	0.3 – 0.8	
v_c main application		m/min	100 – 375	100 – 300	90 – 260	60 – 210	40 – 180	100 – 450	

Grade			HBT020	HBT130	
22D 25 2224	HOLEX	WNMG 080408	XXX	XXX	10
22D 25 2226		WNMG 080412	XXX	XXX	10
●			P	M	
⚙			◙	◙	
Chip breaker			PR	MR	
a_p		mm	1.8 – 6	2 – 6	
f		mm/rev.	0.2 – 0.6	0.15 – 0.55	
v_c main application		m/min	80 – 260	40 – 220	

DIN ISO 5610

HOLEX Screw-on toolholder sets for indexable inserts CN..


PCLNR/L

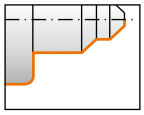

PCSNR/L

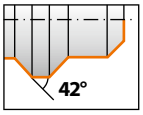
25 5110

Shank size	29W 25 5110 Screw-on toolholder set right-hand	29W 25 5111 Screw-on toolholder set left-hand	ISO code toolholder 25 5110	ISO code toolholder 25 5111	suitable indexable insert	mm	mm	mm	Spare part
mm									
16	XXX	XXX	PCLNR 1616H09; PCSNR 1616H09	PCLNL 1616H09; PCSNL 1616H09	CN.. 09T3..	20	22; 25	100	259981 4
20	XXX	XXX	PCLNR 2020K12; PCSNR 2020K12	PCLNL 2020K12; PCSNL 2020K12	CN.. 1204..	25	28	125	259981 5
25	XXX	XXX	PCLNR 2525M16; PCSNR 2525M16	PCLNL 2525M16; PCSNL 2525M16	CN.. 1606..	32	33	150	259981 6

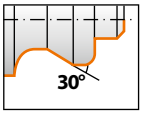
DIN ISO 5610

HOLEX Screw-on toolholder sets for indexable inserts CN../DN../SN..


PCLNR/L



PDJNR/L



PSSNR/L

25 5130

Shank / insert size	29W 25 5130 Screw-on toolholder set right-hand	29W 25 5131 Screw-on toolholder set left-hand	ISO code toolholder 25 5130	ISO code toolholder 25 5131	suitable indexable insert	mm	mm	mm	Spare part
mm									
16	XXX	XXX	PCLNR 1616H09; PDJNR 1616H11; PSSNR 1616H12	PCLNL 1616H09; PDJNL 16161H11; PSSNL 1616H12	CN.. 09T3..; DN.. 1104..; SN.. 1204..	20	25	100	259981 1
20	XXX	XXX	PCLNR 2020K12; PDJNR 2020K11; PSSNR 2020K12	PCLNL 2020K12; PDJNL 2020K11; PSSNL 2020K12	CN.. 1204..; DN.. 1104..; SN.. 1204..	25	28	125	259981 2
25	XXX	XXX	PCLNR 2525M16; PDJNR 2525M15; PSSNR 2525M12	PCLNL 2525M16; PDJNL 2525M15; PSSNL 2525M12	CN.. 1606..; DN.. 1506..; SN.. 1204..	32	33	150	259981 3

GARANT Master Mute

Vibration damping by plug-and-play!

The new vibration-damping GARANT boring bars adapt to the machining conditions in real time.
High component quality at long overhang lengths – simple and reliable.

You can find our new range of vibration-damping tools in compact format on pages 700 – 702.

CBN indexable inserts

Innovative **„all-in-one" concept,** to reduce the amount of variation in your stock levels and to give you the flexibility you need in your production.
New type of CBN with a balanced combination wear-resistance and tensile strength for general-purpose use in hardened steel up to 67 HRC in combination with a special chamfered profile.
For use both in continuous cutting and also in slightly interrupted and heavily interrupted cutting.
SIMPLE. FAST. ALWAYS THE RIGHT CHOICE.

Indexable inserts CBN (0°)

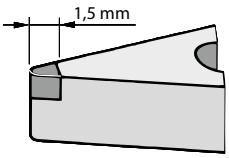
25 5403–5451/5463/5466 – Fitted with 2 cutters.
25 5454/5457/5469–5481 – Fitted with 3 cutters.

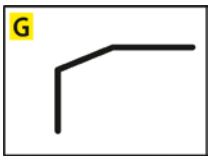
	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 67 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	CuZn	Graphite GRP CRP	Uni
ISO code	N	N	N	P	P	P	P	P	H	H	H	M	M	S	K	N	N	
BU7220									●	●	●							

CNGA ..

Cutting edge version			G
21H 25 5403	CNGA 09T304	BU7220	XXX
21H 25 5406	CNGA 09T308	BU7220	XXX
21H 25 5409	CNGA 120404	BU7220	XXX
21H 25 5412	CNGA 120408	BU7220	XXX
21H 25 5418	CNGA 120412	BU7220	XXX
21H 25 5421	CNGA 120416	BU7220	XXX
a_p		mm	0.05 – 0.2
f		mm/rev.	0.05 – 0.15
v_c main application		m/min	90 – 140

25 5412





Cutting edge (chamfered) Chamfering generally applicable for steel up to 67 HRC.

DNGA ..

Cutting edge version			G
21H 25 5439	DNGA 110404	BU7220	XXX
21H 25 5442	DNGA 110408	BU7220	XXX
21H 25 5445	DNGA 150604	BU7220	XXX
21H 25 5448	DNGA 150608	BU7220	XXX
21H 25 5451	DNGA 150612	BU7220	XXX
a_p		mm	0.05 – 0.2
f		mm/rev.	0.05 – 0.15
v_c main application		m/min	90 – 140

25 5445

TNGA 1604..

Cutting edge version			G
21H 25 5454	TNGA 160404	BU7220	XXX
21H 25 5457	TNGA 160408	BU7220	XXX
a_p		mm	0.05 – 0.2
f		mm/rev.	0.05 – 0.15
v_c main application		m/min	90 – 140

25 5454

VNGA 1604..

Cutting edge version			G
21H 25 5463	VNGA 160404	BU7220	XXX
21H 25 5466	VNGA 160408	BU7220	XXX
a_p		mm	0.05 – 0.2
f		mm/rev.	0.05 – 0.15
v_c main application		m/min	90 – 140

25 5466

WNGA ..

Cutting edge version			G
21H 25 5469	WNGA 060404	BU7220	XXX
21H 25 5472	WNGA 060408	BU7220	XXX
21H 25 5475	WNGA 080404	BU7220	XXX
21H 25 5478	WNGA 080408	BU7220	XXX
21H 25 5481	WNGA 080412	BU7220	XXX
a_p		mm	0.05 – 0.2
f		mm/rev.	0.05 – 0.15
v_c main application		m/min	90 – 140

25 5475

KYOCERA Indexable inserts CBN (0°)

MEGACOAT coated CBN inserts.

Size ME – MultiEdge; 2 or 3 cutting edges per insert.
Size MET – MultiEdge Tough; 2 or 3 cutting edges per insert, with special honing for optimisation in interrupted cutting.
Size MEW – MultiEdge Wiper; 2 cutting edges per insert with wiper geometry.

Type			ME	MET	MEW
25H 25 5608	CNGA 120404	KBN05M	XXX	–	–
25H 25 5609		KBN25M	XXX	XXX	XXX
25H 25 5610		KBN35M	–	XXX	–
25H 25 5615	CNGA 120408	KBN05M	XXX	–	–
25H 25 5616		KBN25M	XXX	XXX	XXX
25H 25 5617		KBN35M	XXX	XXX	–
25H 25 5624	CNGA 120412	KBN35M	–	XXX	–
25H 25 5629	DNGA 150604	KBN05M	XXX	–	–
25H 25 5630		KBN25M	XXX	XXX	–
25H 25 5631		KBN35M	XXX	XXX	–
25H 25 5633	DNGA 150608	KBN05M	XXX	–	–
25H 25 5634		KBN25M	XXX	XXX	–
25H 25 5635		KBN35M	XXX	XXX	–
25H 25 5657	TNGA 160404	KBN05M	XXX	–	–
25H 25 5658		KBN25M	XXX	–	–
25H 25 5659		KBN35M	XXX	XXX	–
25H 25 5661	TNGA 160408	KBN05M	XXX	–	–
25H 25 5662		KBN25M	XXX	XXX	–
25H 25 5663		KBN35M	XXX	XXX	–
25H 25 5678	VNGA 160404	KBN25M	XXX	XXX	–
25H 25 5679		KBN35M	XXX	XXX	–
25H 25 5682	VNGA 160408	KBN25M	XXX	XXX	–
25H 25 5683		KBN35M	XXX	XXX	–
25H 25 5685	WNGA 080404	KBN05M	XXX	–	–
25H 25 5686		KBN25M	XXX	XXX	–
25H 25 5689	WNGA 080408	KBN05M	XXX	–	–
25H 25 5690		KBN25M	XXX	XXX	–
25H 25 5691		KBN35M	XXX	XXX	–
a_p		mm	0.05 – 0.2	0.1 – 0.3	0.05 – 0.2
f		mm/rev.	0.1 – 0.2	0.1 – 0.2	0.15 – 0.3
v_c main application		m/min	120 – 200	100 – 180	120 – 200

25 5609_ME

25 5630_ME

25 5658_ME

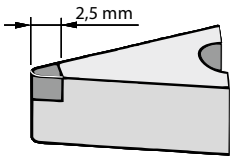
25 5678_ME

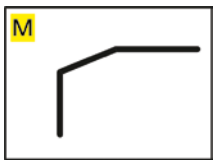
25 5686_ME

HOLEX Indexable inserts CBN (0°)

- Disposable insert.
- Single cutting edge.

Note: Further indexable insert shapes, sizes and corner radii available on request.





Cutting edge (chamfered). General purpose chamfering (steel above 45 HRC) even for slightly interrupted cutting.

Cutting edge version			M
22I 25 5578	CNMA 120404	BUX220	XXX
22I 25 5580	CNMA 120408	BUX220	XXX
22I 25 5582	CNMA 120412	BUX220	XXX
22I 25 5584	DNMA 150604	BUX220	XXX
22I 25 5586	DNMA 150608	BUX220	XXX
22I 25 5588	DNMA 150612	BUX220	XXX
22I 25 5590	TNMA 160404	BUX220	XXX
22I 25 5592	TNMA 160408	BUX220	XXX
22I 25 5594	TNMA 160412	BUX220	XXX
22I 25 5596	VNMA 160404	BUX220	XXX
22I 25 5598	VNMA 160408	BUX220	XXX
a_p (25 5578, 25 5580, 25 5582, 25 5584, 25 5586, 25 5588, 25 5590, 25 5592, 25 5594)		mm	0.1 – 0.5
a_p (25 5596, 25 5598)		mm	0.1 – 0.25
f		mm/rev.	0.1 – 0.2
v_c main application		m/min	80 – 200

25 5578

25 5584

25 5590

25 5596

Garant Indexable inserts ceramic (0°)

High quality, high-temperature ceramic tool material for reliable operation on materials that are hard and difficult to machine.
KB 7205: Coated aluminium oxide titanium carbide ceramic for machining hard materials up to 68 HRC.

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 67 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	CuZn	Graphite GRP CRP	Uni
ISO code	N	N	N	P	P	P	P	P	H	H	H	M	M	S	K	N	N	
HART									250	210	180				250			

Application range			HART	
21H 25 5703	CNGA 120404	KB7205	XXX	10
21H 25 5707	CNGA 120408	KB7205	XXX	10
21H 25 5711	CNGA 120412	KB7205	XXX	10
21H 25 5716	DNGA 150604	KB7205	XXX	10
21H 25 5720	DNGA 150608	KB7205	XXX	10
21H 25 5724	DNGA 150612	KB7205	XXX	10
21H 25 5729	SNGA 120408	KB7205	XXX	10
21H 25 5746	TNGA 160408	KB7205	XXX	10
21H 25 5756	VNGA 160404	KB7205	XXX	10
21H 25 5761	VNGA 160408	KB7205	XXX	10
Cutting edge version			0.2 mm×25°	
a_p		mm	0.1 – 0.9	
f		mm/rev.	0.05 – 0.15	

25 5703

25 5746

25 5716

25 5756

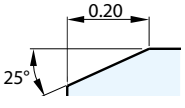
25 5729

KYOCERA Indexable inserts ceramic (0°)

MEGACOAT coated ceramic inserts.

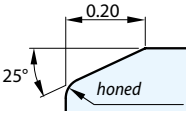
Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 67 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	CuZn	Graphite GRP CRP	Uni
ISO code	N	N	N	P	P	P	P	P	H	H	H	M	M	S	K	N	N	
GG															550			
HART									200	160	140							

Chamfering T02025



- *0.20 mm×25°*
- *chamfered*

Chamfering S02025



- *0.20 mm×25°*
- *chamfered and honed*

Application range			GG	HART	
25F 25 5803	CNGA 120404	PT600M	XXX	XXX	10
25F 25 5806	CNGA 120408	PT600M	–	XXX	10
25F 25 5810	CNGA 120412	PT600M	XXX	XXX	10
25F 25 5815	DNGA 150604	PT600M	XXX	–	10
25F 25 5819	DNGA 150608	PT600M	XXX	–	10
25F 25 5823	DNGA 150612	PT600M	XXX	–	10
25F 25 5832	SNGA 120412	PT600M	–	XXX	10
25F 25 5842	TNGA 160404	PT600M	XXX	XXX	10
25F 25 5845	TNGA 160408	PT600M	–	XXX	10
25F 25 5850	TNGA 160412	PT600M	–	XXX	10
25F 25 5856	VNGA 160404	PT600M	XXX	XXX	10
25F 25 5857	VNGA 160408	PT600M	XXX	XXX	10
Chamfer			T02025	S02025	
a_p		mm	0.5 – 2.5	0.1 – 0.9	
f		mm/rev.	0.15 – 0.4	0.1 – 0.25	

25 5803_HART

25 5850_HART

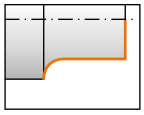
25 5819_GG

25 5832_HART

25 5857_HART

DIN ISO 5610

Garant CRSN 90° clamping toolholders for indexable inserts RN..

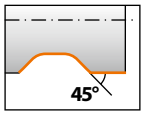


25 5795

Shank / insert size	21T 25 5795	21T 25 5796	ISO code toolholder	suitable indexable insert				Shim	Shim screw	Clamp	Washer for clamp
	Clamping toolholder										
mm	right-hand	left-hand			mm	mm	mm				
25/12	XXX	XXX	CRSNR/L 2525M12	RN.. 1207..	32	34	150	259031 43	259025 2	259035 3	259041 1
32/12	XXX	XXX	CRSNR/L 3225P12	RN.. 1207..	32	34	170	259031 43	259025 2	259035 3	259041 1

DIN ISO 5610

Garant CRDN 45° clamping toolholders for indexable inserts RN..



25 5798

Shank / insert size	21T 25 5798	ISO code toolholder	suitable indexable insert				Shim	Shim screw	Clamp	Washer for clamp
	Clamping toolholder									
mm	neutral			mm	mm	mm				
25/12	XXX	CRDNN 2525M12	RN.. 1207..	12.5	34	150	259031 43	259025 2	259035 3	259041 1
32/12	XXX	CRDNN 3225P12	RN.. 1207..	12.5	34	170	259031 43	259025 2	259035 3	259041 1

Garant Indexable inserts ceramic (0°)

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	CuZn	Graphite GRP CRP					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	M	M	S	K	N	N					
25 5770									250	210	190	180				250			●			○	●
25 5774															300				●	●	○	○	●

Application range			HART	S	
21H 25 5770	RNGN 120700	KB7205	XXX	–	10
21H 25 5774		KU7415	–	XXX	10
Cutting edge version			0.1 mm×20°	0.05 mm×20°	
a_p		mm	0.1 – 0.8	0.1 – 1	
f		mm/rev.	0.05 – 0.15	0.3 – 0.5	

KB 7205

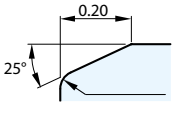
KU 7415

KYOCERA Indexable inserts ceramic (0°)

MEGACOAT coated ceramic inserts.

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	CuZn	Graphite GRP CRP					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	M	M	S	K	N	N					
HART									60	50	40	30							●				●

Application range			HART	
25F 25 5870	RNGN 120700	PT600M	XXX	10
Chamfer			S02025	
Cutting edge version			0.2 mm×25°	
a_p		mm	0.2 – 0.7	
f		mm/rev.	0.05 – 0.15	



Chamfering S02025

25 5870

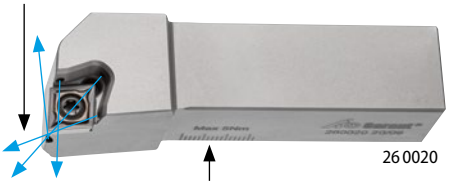
DIN ISO 5610

SCLC 95° eco screw-on toolholder for indexable inserts CC..

GARANT eco system screw-on toolholder with internal coolant feed to the cutting edge. Cooling by means of precision nozzles effectively and efficiently reduces the thermal loading, since the coolant stream is optimally directed between the chip and cutting edge. This results in higher productivity, longer tool life and higher process reliability.

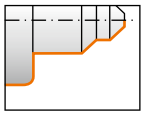
Note: Coolant transfer only in conjunction with GARANT eco-system toolholders No. 317900 – 319886.

Optimum washing of the cutting edge with coolant.



26 0020

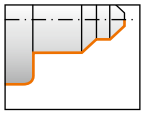
Positioning within the scale ensures precise coolant transfer.



Shank size / insert size	21U 26 0020	21U 26 0021	ISO code toolholder	suitable indexable insert				Pack of insert screws
	eco screw-on toolholder							
mm	right-hand	left-hand			mm	mm	mm	
16/09	XXX	XXX	SCLCR/L 1616X09	CC.. 09T3..	20	27	74	269028 28
20/09	XXX	XXX	SCLCR/L 2020X09	CC.. 09T3..	25	27	86	269028 28

DIN ISO 5610

SCLC 95° screw-on toolholder for indexable inserts CC..

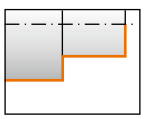


26 0006

Shank / insert size	21T 26 0006	21T 26 0007	ISO code toolholder	suitable indexable insert				Pack of insert screws	Shim	Shim screw
	Screw-on toolholder									
mm	right-hand	left-hand			mm	mm	mm			
8/06	XXX	XXX	SCLCR/L 0808D06	CC.. 0602..	10	9	60	269028 22	–	–
10/06	XXX	XXX	SCLCR/L 1010E06	CC.. 0602..	12	10	70	269028 22	–	–
12/09	XXX	XXX	SCLCR/L 1212F09	CC.. 09T3..	16	13	80	269028 2	–	–
16/09	XXX	XXX	SCLCR/L 1616H09	CC.. 09T3..	20	17	100	269028 2	269005 1	269013 2
20/09	XXX	XXX	SCLCR/L 2020K09	CC.. 09T3..	25	17	125	269028 2	269005 1	269013 2
25/09	XXX	XXX	SCLCR/L 2525M09	CC.. 09T3..	32	19	150	269028 2	269005 1	269013 2
16/12			SCLCR/L 1616H12	CC.. 1204..	20	20	100	269028 20	269005 6	269013 5
20/12		XXX	SCLCR/L 2020K12	CC.. 1204..	25	20	125	269028 20	269005 6	269013 5
25/12	XXX	XXX	SCLCR/L 2525M12	CC.. 1204..	32	20	150	269028 20	269005 6	269013 5

DIN ISO 5610

SCAC 90° screw-on toolholder for indexable inserts CC..

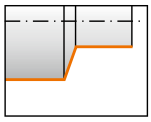


26 0014

Shank / insert size	21T 26 0014	21T 26 0015	ISO code toolholder	suitable indexable insert				Pack of insert screws
	Screw-on toolholder							
mm	right-hand	left-hand			mm	mm	mm	
8/06	XXX	XXX	SCACR/L 0808M06	CC.. 0602..	8	8	150	269021 1
10/06	XXX	XXX	SCACR/L 1010M06	CC.. 0602..	10	10	150	269021 1
12/06	XXX	XXX	SCACR/L 1212M06	CC.. 0602..	12	12	150	269021 1
16/06	XXX	XXX	SCACR/L 1616M06	CC.. 0602..	16	16	150	269021 1
12/09	XXX	XXX	SCACR/L 1212M09	CC.. 09T3..	12	12	150	269021 2
16/09	XXX	XXX	SCACR/L 1616M09	CC.. 09T3..	16	16	150	269021 2

DIN ISO 5610

Garant SCRC 75° screw-on toolholder for indexable inserts CC..

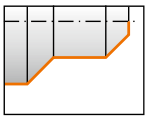


26 0004

Shank / insert size	21T 26 0004	21T 26 0005	ISO code toolholder	suitable indexable insert				Pack of insert screws	Shim	Shim screw
	Screw-on toolholder									
mm	right-hand	left-hand			mm	mm	mm			
8/06	XXX	XXX	SCRCR/L 0808D06	CC.. 0602..	9	10	60	269028 22	–	–
10/06	XXX	XXX	SCRCR/L 1010E06	CC.. 0602..	11	10	70	269028 22	–	–
12/09	XXX	XXX	SCRCR/L 1212F09	CC.. 09T3..	13	15	80	269028 14	–	–
16/09	XXX	XXX	SCRCR/L 1616H09	CC.. 09T3..	17	15	100	269028 2	269005 1	269013 2
20/09	XXX	XXX	SCRCR/L 2020K09	CC.. 09T3..	22	18	125	269028 2	269005 1	269013 2
16/12	XXX	XXX	SCRCR/L 1616H12	CC.. 1204..	17	20	100	269028 16	269005 6	269013 5
20/12	XXX	XXX	SCRCR/L 2020K12	CC.. 1204..	22	20	125	269028 16	269005 6	269013 5
25/12	XXX	XXX	SCRCR/L 2525M12	CC.. 1204..	27	20	150	269028 16	269005 6	269013 5

DIN ISO 5610

Garant SCSC 45° screw-on toolholder for indexable inserts CC..



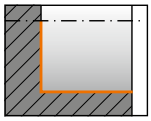
26 0000

Shank / insert size	21T 26 0000	21T 26 0001	ISO code toolholder	suitable indexable insert				Pack of insert screws	Shim	Shim screw
	Screw-on toolholder									
mm	right-hand	left-hand			mm	mm	mm			
8/06	XXX	XXX	SCSCR/L 0808D06	CC.. 0602..	10	12	60	269028 22	–	–
10/06	XXX	XXX	SCSCR/L 1010E06	CC.. 0602..	12	12	70	269028 22	–	–
12/09	XXX	XXX	SCSCR/L 1212F09	CC.. 09T3..	16	19	80	269028 2	–	–
16/09	XXX	XXX	SCSCR/L 1616H09	CC.. 09T3..	20	20	101	269028 2	269005 1	269013 2
20/09	XXX	XXX	SCSCR/L 2020K09	CC.. 09T3..	25	22	126	269028 2	269005 1	269013 2
16/12	XXX	XXX	SCSCR/L 1616H12	CC.. 1204..	20	22	101	269028 20	269005 6	269013 5
20/12	XXX	XXX	SCSCR/L 2020K12	CC.. 1204..	25	24	126	269028 20	269005 6	269013 5
25/12	XXX	XXX	SCSCR/L 2525M12	CC.. 1204..	32	27	151	269028 20	269005 6	269013 5

8×D | Carbide | DIN 8024

Garant E..SCLC 95° boring bars for indexable inserts CC..

Size 4/03; 5/03 – Without internal cooling.



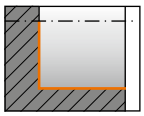
26 0016

Shank ∅ / insert size	21T 26 0016	21T 26 0017	ISO code toolholder	suitable indexable insert					Pack of insert screws
	Boring bar carbide								
mm	right-hand	left-hand			∅ D_{min} mm	mm	mm	mm	
4/03	XXX	XXX	C04G SCLCR/L03	CC.. 0301..	5	2.5	3.8	90	269028 13
5/03	XXX	XXX	C05H SCLCR/L03	CC.. 0301..	6	3	4.8	100	269028 19
6/03	XXX	XXX	E06J SCLCR/L03	CC.. 0301..	7	3.5	5.8	110	269028 19
8/06	XXX	XXX	E08K SCLCR/L06	CC.. 0602..	10	5	7.6	125	269028 7
10/06	XXX	XXX	E10K SCLCR/L06	CC.. 0602..	12	6	9.6	125	269028 7
12/06	XXX	XXX	E12M SCLCR/L06	CC.. 0602..	14	8	11.5	150	269028 7
16/09	XXX	XXX	E16R SCLCR/L09	CC.. 09T3..	18	10	15.5	200	269028 8
20/09	XXX	XXX	E20S SCLCR/L09	CC.. 09T3..	23	12	19	250	269028 8
25/12	XXX	XXX	E25S SCLCR/L12	CC.. 1204..	30	15	24	250	269028 8

8×D | Carbide | DIN 8024

E..SCLC 95° boring bar sets for indexable inserts CC..

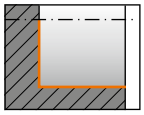
26 0018



29W 26 0018	29W 26 0019	ISO code toolholder	suitable indexable insert	∅ D_{min}				Pack of insert screws
Boring bar set carbide				mm	mm	mm	mm	
right-hand	left-hand							
XXX	XXX	E08K SCLCR/L06; E10K SCLCR/L06; E12M SCLCR/L06	CC.. 0602..	10; 12; 14	5; 6; 8	7.6; 9.6; 11.5	125; 125; 150	269028 7

5×D | HSS | DIN 8024

AH..SCLC 95° boring bars for indexable inserts CC..



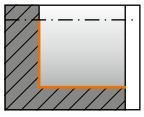
26 0022_20/09

Shank ∅ / insert size	21T 26 0022	21T 26 0023	ISO code toolholder	suitable indexable insert	∅ D_{min}						Pack of insert screws
	Boring bar HSS				mm	mm	mm	mm	mm	mm	
mm	right-hand	left-hand									
0410/03	XXX	XXX	AH0410H SCLCR/L03	CC.. 0301..	5	2.5	9	4	24	100	269028 13
0610/03	XXX	XXX	AH0610H SCLCR/L03	CC.. 0301..	7	2.5	9	6	24	100	269028 13
0608/06	XXX	XXX	AH0608H SCLCR/L06	CC.. 0602..	8	4	7	6	25	100	269028 7
08/06	XXX	XXX	AH08K SCLCR/L06	CC.. 0602..	10	5	7	–	–	125	269028 7
0810/06	XXX	XXX	AH0810J SCLCR/L06	CC.. 0602..	12	6	9	8	32	110	269028 7
10/06	XXX	XXX	AH10K SCLCR/L06	CC.. 0602..	12	6	9	–	–	125	269028 7
1012/06	XXX	XXX	AH1012K SCLCR/L06	CC.. 0602..	14	7	11	10	38	125	269028 7
12/06	XXX	XXX	AH12M SCLCR/L06	CC.. 0602..	14	7	11	–	–	150	269028 7
1216/06	XXX	XXX	AH1216M SCLCR/L06	CC.. 0602..	18	9	15	12	50	150	269028 7
16/09	XXX	XXX	AH16Q SCLCR/L09	CC.. 09T3..	18	11	15	–	–	180	269028 8
20/09	XXX	XXX	AH20R SCLCR/L09	CC.. 09T3..	23	13	18	–	–	200	269028 8
25/12	XXX	XXX	AH25R SCLCR/L12	CC.. 1204..	28	15.5	23	–	–	200	269028 9

5×D | HSS | DIN 8024

AH..SCLC 95° boring bar sets for indexable inserts CC..

26 0024

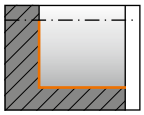


29W 26 0024	29W 26 0025	ISO code toolholder	suitable indexable insert	∅ D_{min}						Pack of insert screws
Boring bar set HSS				mm	mm	mm	mm	mm	mm	
right-hand	left-hand									
XXX	XXX	AH0608H SCLCR/L06; AH0810J SCLCR/L06; AH1012K SCLCR/L06; AH1216M SCLCR/L06	CC.. 0602..	8; 12; 14; 18	4; 6; 7; 9	7; 9; 11; 15	6; 8; 10; 12	25; 32; 38; 50	100; 110; 125; 150	269028 7

5×D DIN 8024

KYOCERA A..SCLC 95° Dynamic Bar for indexable inserts CC..

Streamlined flutes for improved chip evacuation, reduced tendency to vibrate, stable machining conditions.

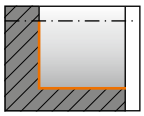


26 0028

Shank Ø / insert size	25U 26 0028	25U 26 0029	ISO code toolholder	suitable indexable insert	ØD min				Insert screw
	Boring bar steel								
mm	right-hand	left-hand			mm	mm	mm	mm	
8/06	XXX	XXX	A08X SCLCR/L06	CC.. 0602..	10	5	7	120	269022 2
10/06	XXX	XXX	A10L SCLCR/L06	CC.. 0602..	12	6	9	140	269022 2
12/06	XXX	XXX	A12M SCLCR/L06	CC.. 0602..	14	7	11	150	269022 2
16/09	XXX	XXX	A16Q SCLCR/L09	CC.. 09T3..	18	9	15	180	269022 3
20/09	XXX	XXX	A20R SCLCR/L09	CC.. 09T3..	22	11	19	200	269022 3
25/09	XXX	XXX	A25S SCLCR/L09	CC.. 09T3..	27	13.5	24	250	269022 3

3×D DIN 8024

Garant A..SCLC 95° boring bars for indexable inserts CC..



26 0032

Shank Ø / insert size	21T 26 0032	21T 26 0033	ISO code toolholder	suitable indexable insert	ØD min						Pack of insert screws	Shim	Shim screw
	Boring bar steel												
mm	right-hand	left-hand			mm	mm	mm	mm	mm	mm			
0608/06	XXX	XXX	A0608H SCLCR/L06	CC.. 0602..	8	4.2	7	6	21.5	100	269028 5	–	–
8/06	XXX	XXX	A08H SCLCR/L06	CC.. 0602..	10	6	7	–	–	100	269028 5	–	–
0810/06	XXX	XXX	A0810J SCLCR/L06	CC.. 0602..	11	6	9	8	27	110	269028 5	–	–
10/06	XXX	XXX	A10K SCLCR/L06	CC.. 0602..	12	7	9	–	–	125	269028 22	–	–
1012/06	XXX	XXX	A1012K SCLCR/L06	CC.. 0602..	13	6.9	11	10	32.5	125	269028 5	–	–
12/06	XXX	XXX	A12L SCLCR/L06	CC.. 0602..	16	9	11	–	–	140	269028 22	–	–
1216/06	XXX	XXX	A1216M SCLCR/L06	CC.. 0602..	16	8.9	15	12	42	150	269028 5	–	–
16/09	XXX	XXX	A16Q SCLCR/L09	CC.. 09T3..	20	11	14	–	–	180	269028 14	–	–
20/09	XXX	XXX	A20R SCLCR/L09	CC.. 09T3..	25	13	18	–	–	200	269028 14	–	–
25/12	XXX	XXX	A25R SCLCR/L12	CC.. 1204..	30	17	24	–	–	200	269028 9	–	–
32/12	XXX	XXX	A32S SCLCR/L12	CC.. 1204..	40	22	31	–	–	250	269028 20	269005 6	269013 5
40/12	XXX	XXX	A40T SCLCR/L12	CC.. 1204..	49	27	38.5	–	–	300	269028 20	269005 6	269013 5

3×D DIN 8024

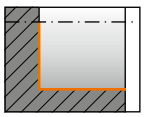
HOLEX ..SCLC 95° boring bar sets for indexable inserts CC..

26 0038 – Without through-coolant feed.

Supplied with:

Size SET06 – Plastic case

Size SET09 – Plastic case



26 0036_SET06

Type	29W 26 0036	29W 26 0037	29W 26 0038	ISO code toolholder		suitable indexable insert	ØD min						Pack of insert screws
	Boring bar set, steel, with IC		Boring bar set, steel, without IC	26 0036 26 0037	26 0038								
	right-hand	left-hand	right-hand				mm	mm	mm	mm	mm	mm	
SET06	XXX	XXX	XXX	A0608H SCLCR/L06; A0810J SCLCR/L06; A1012K SCLCR/L06; A1216M SCLCR/L06	S0608H SCLCR06; S0810J SCLCR06; S1012K SCLCR06; S1216M SCLCR06	CC.. 0602..	8; 11; 13; 16	4; 6; 7; 9	7; 9; 11; 15	6; 8; 10; 12	22; 27; 33; 42	100; 110; 125; 150	269028 7
SET09	XXX	XXX	XXX	A16Q SCLCR/L09; A20R SCLCR/L09; A25R SCLCR/L09	S16Q SCLCR09; S20R SCLCR09; S25R SCLCR09	CC.. 09T3..	20; 25; 28	10.7; 10.5; 14.5	15; 18; 23	–	–	180; 200; 200	269028 14

Indexable inserts CC..

CCGT fine finishing

Grade			PR1425	PR1535	
25E 26 0040	KYOCERA	CCGT 030101	XXX	XXX	10
25E 26 0041	KYOCERA	CCGT 030102	XXX	XXX	10
●			P	M	
○			M	S	
⚙			◍	◍	
Chip breaker			MP-CF	MFP-PF	
a_p		mm	0.03 – 0.2		
f		mm/rev.	0.02 – 0.1		
v_c main application		m/min	60 – 180	70 – 160	
v_c secondary application		m/min	100 – 150	40 – 60	

CC.T finishing

Grade			CU7010	HB7010-1	HB7020	HB7025-1	HB7035-1	HB7120-1	HB7125-1	HB7140-1	HU7315-1	HB7410-1	HB7415	
21I 26 0046		CCGT 030101	–	–	–	XXX	–	–	XXX	–	XXX	–	–	10
21I 26 0047		CCGT 030102	–	–	–	XXX	–	–	XXX	–	XXX	–	–	10
21G 26 0050		CCMT 060202	XXX	XXX	XXX	–	XXX	XXX	–	XXX	–	–	XXX	10
21G 26 0051		CCMT 060202 wiper	–	–	XXX	–	–	–	–	–	–	–	–	10
21G 26 0052		CC.T 060204	XXX	XXX	XXX	–	XXX	XXX	–	XXX	–	XXX	XXX	10
21G 26 0053		CCMT 060204 wiper	–	–	XXX	–	–	–	–	–	–	–	–	10
21G 26 0056	Garant	CCMT 09T302	XXX	XXX	XXX	–	XXX	XXX	–	XXX	–	–	XXX	10
21G 26 0057		CCMT 09T302 wiper	–	–	XXX	–	–	–	–	–	–	–	–	10
21G 26 0058		CC.T 09T304	XXX	XXX	XXX	–	XXX	XXX	–	XXX	–	XXX	XXX	10
21G 26 0059		CCMT 09T304 wiper	–	–	XXX	–	–	–	–	–	–	–	–	10
21G 26 0060		CCMT 09T308	–	XXX	XXX	–	XXX	XXX	–	XXX	–	–	XXX	10
21G 26 0064		CCMT 120404	XXX	XXX	XXX	–	XXX	XXX	–	XXX	–	–	XXX	10
21G 26 0066		CCMT 120408	–	XXX	XXX	–	XXX	XXX	–	XXX	–	–	XXX	10
●			P	P	P	P	P	M	M	M	N	Ti	S	
○			M	–	–	–	–	–	–	–	–	–	–	
⚙			◍	◍	◍	◍	◍	◍	◍	◍	◍	◍	◍	
Chip breaker (26 0046, 26 0047, 26 0050, 26 0052, 26 0056, 26 0058, 26 0060, 26 0064, 26 0066)			SS	SS	SS	SF	SS	VS	VF	VS	AF	TAS	TIS	
Chip breaker (26 0051, 26 0053, 26 0057, 26 0059)			–	–	WSS	–	–	–	–	–	–	–	–	
Tolerance			M	M	M	M	M	M	M	M	M	G	M	
a_p		mm	0.2 – 2.5	0.2 – 2.5	0.2 – 2.5	0.05 – 0.2	0.2 – 2.5	0.2 – 2.5	0.05 – 0.2	0.2 – 2.5	0.05 – 0.2	0.2 – 2	0.2 – 2	
f		mm/rev.	0.05 – 0.25	0.05 – 0.25	0.05 – 2.5	0.03 – 0.1	0.05 – 0.25	0.1 – 0.3	0.03 – 0.1	0.1 – 0.3	0.03 – 0.1	0.1 – 0.3	0.1	
v_c main application		m/min	90 – 210	150 – 500	150 – 400	120 – 300	120 – 350	90 – 290	120 – 300	70 – 260	120 – 300	60 – 90	60 – 70	
v_c secondary application		m/min	80 – 140	–	–	–	–	–	–	–	–	–	–	

Grade			SP4019	
28D 26 0070		CCGT 060200	XXX	10
28D 26 0071		CCGT 060201	XXX	10
28D 26 0072		CCGT 060202	XXX	10
28D 26 0073		CCGT 060204	XXX	10
28D 26 0075	KENNAMETAL	CCGT 09T300	XXX	10
28D 26 0076		CCGT 09T301	XXX	10
28D 26 0077		CCGT 09T302	XXX	10
28D 26 0078		CCGT 09T304	XXX	10
28D 26 0079		CCGT 09T308	XXX	10
●			UNI	
⚙			◍	
Chip breaker			62	
a_p		mm	0.15 – 3	
f		mm/rev.	0.05 – 0.3	
v_c main application		m/min	30 – 440	

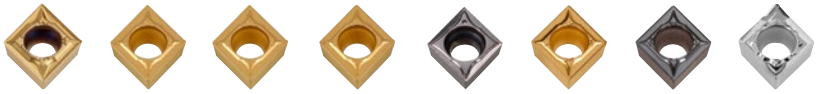
Grade			PV720	CA510	CA515	CA525	PR1225	PR1425	CA6525	PDL025	PR1325	SW05	
25E 26 0090		CCGT 060201	–	–	–	–	XXX	XXX	–	XXX	–	–	10
25E 26 0091		CC.T 060202	XXX	XXX	XXX	XXX	XXX	XXX	–	XXX	–	–	10
25E 26 0093		CCMT 060202 wiper	XXX	XXX	XXX	XXX	XXX	XXX	–	–	–	–	10
25E 26 0092		CC.T 060204	XXX	XXX	XXX	XXX	XXX	XXX	–	XXX	–	–	10
25E 26 0094		CCMT 060204 wiper	XXX	XXX	XXX	XXX	XXX	XXX	–	–	–	–	10
25E 26 0095	KYOCERA	CCGT 09T301	–	–	–	–	XXX	XXX	–	XXX	–	–	10
25E 26 0096		CC.T 09T302	XXX	–	(XXX)	XXX	XXX	XXX	–	XXX	–	–	10
25E 26 0097		CC.T 09T304	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	10
25E 26 0099		CCMT 09T304 wiper	XXX	XXX	XXX	XXX	XXX	XXX	–	–	–	–	10
25E 26 0098		CCMT 09T308	XXX	XXX	XXX	XXX	–	–	XXX	–	XXX	XXX	10
25E 26 0100		CCMT 09T308 wiper	XXX	XXX	XXX	XXX	XXX	XXX	–	–	–	–	10
●			P	P	P	P	P	M	M	N	S	Ti	
○			–	–	–	–	M	–	–	–	–	–	
⚙			◍	◍	◍	▨	▨	◍	▨	▨	▨	◍	
Chip breaker (26 0090, 26 0091, 26 0092, 26 0095, 26 0096, 26 0097, 26 0098)			HQ	HQ	HQ	HQ	MFP-SK	MFP-GF	MQ	MFP-SK	MQ	MQ	
Chip breaker (26 0093, 26 0094, 26 0099, 26 0100)			WP	WP	WP	WP	WP	WP	–	–	–	–	
Tolerance (26 0090, 26 0091, 26 0092, 26 0095, 26 0096, 26 0097, 26 0098)			M	M	M	M	G	G	M	G	M	M	
Tolerance (26 0093, 26 0094, 26 0099, 26 0100)			M	M	M	M	M	M	–	–	–	–	
a_p		mm	0.5 – 2.5	0.5 – 2.5	0.5 – 2.5	0.5 – 2.5	0.5 – 1	0.5 – 1	0.5 – 2.5	0.5 – 1	0.1 – 1	0.1 – 1	
f		mm/rev.	0.05 – 0.25	0.05 – 0.25	0.05 – 0.25	0.05 – 0.25	0.03 – 0.15	0.03 – 0.12	0.05 – 0.2	0.03 – 0.15	0.05 – 0.2	0.05 – 0.2	
v_c main application		m/min	60 – 270	140 – 450	110 – 380	80 – 330	50 – 150	100 – 150	50 – 140	100 – 300	50 – 100	40 – 100	
v_c secondary application		m/min	–	–	–	–	50 – 110	–	–	–	–	–	

Grade			HBT020	HBT130	
22D 26 0084		CCMT 060204	XXX	XXX	10
22D 26 0086	HOLEX	CCMT 09T304	XXX	XXX	10
22D 26 0088		CC.T 060202	XXX	XXX	10
●			P	M	
⚙			▨	▨	
Chip breaker			PF	M	
a_p		mm	0.4 – 2	0.1 – 1	
f		mm/rev.	0.1 – 0.3	0.05 – 0.2	
v_c main application		m/min	70 – 250	40 – 220	

CC.T Medium machining

Grade			CB7010	HB7010-1	HB7020	HB7035-1	HB7120-1	HB7140-1	HB7210-1	HU7310	HB7310	HB725	HB730-1	
21G 26 0140	Garant	CC.T 060202	–	XXX	XXX	XXX	XXX	XXX	–	XXX	XXX	–	–	10
21G 26 0142		CC.T 060204	–	XXX	XXX	XXX	XXX	XXX	–	XXX	XXX	XXX	–	10
21G 26 0143		CCMT 060204 wiper	–	–	XXX	–	–	–	–	–	–	–	–	10
21G 26 0145		CCMT 060208 wiper	–	–	XXX	–	–	–	–	–	–	–	–	10
21G 26 0148		CC.T 09T302	XXX	XXX	XXX	XXX	XXX	XXX	–	XXX	XXX	–	–	10
21G 26 0150		CC.T 09T304	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	10
21G 26 0151		CCMT 09T304 wiper	–	–	XXX	–	–	–	–	–	–	–	–	10
21G 26 0152		CC.T 09T308	–	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	–	10
21G 26 0153		CCMT 09T308 wiper	–	–	XXX	–	–	–	–	–	–	–	–	10
21G 26 0156		CCGT 120402	–	–	–	–	–	–	–	XXX	XXX	–	–	10
21G 26 0158		CC.T 120404	XXX	XXX	XXX	XXX	XXX	XXX	–	XXX	XXX	XXX	–	10
21G 26 0159		CCMT 120404 wiper	–	–	XXX	–	–	–	–	–	–	–	–	10
21G 26 0160		CC.T 120408	–	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	–	10
21G 26 0161		CCMT 120408 wiper	–	–	XXX	–	–	–	–	–	–	–	–	10
●			P	P	P	P	M	M	K	N	N	UNI	UNI	
○			M	–	–	–	–	–	–	–	–	–	–	
⚙			●	●	◪	◒	●	◪	◪	●	●	◪	◪	
Chip breaker (26 0140, 26 0142, 26 0148, 26 0150, 26 0152, 26 0156, 26 0158, 26 0160)			SM	SM	SM	SM	VM	VM	GM	AM	AM	UM	XUM	
Chip breaker (26 0143, 26 0145, 26 0151, 26 0153, 26 0159, 26 0161)			–	–	WSM	–	–	–	–	–	–	–	–	
Tolerance			M	M	M	M	M	M	M	G	G	M	M	
a_p		mm	0.2 – 4	0.2 – 4	0.2 – 4	0.2 – 4	0.2 – 4	0.2 – 4	0.2 – 2.5	0.1 – 4	0.1 – 4	0.2 – 4	0.8 – 2	
f		mm/rev.	0.1 – 0.3	0.1 – 0.3	0.1 – 0.3	0.1 – 0.3	0.1 – 0.3	0.1 – 0.3	0.1 – 0.25	0.05 – 0.5	0.05 – 0.5	0.05 – 0.5	0.15 – 0.35	
v_c main application		m/min	90 – 240	120 – 440	120 – 350	100 – 320	80 – 260	60 – 320	100 – 450	350 – 600	350 – 600	50 – 250	35 – 230	
v_c secondary application		m/min	70 – 180	–	–	–	–	–	–	–	–	–	–	

Grade			SP4019	
28A 26 0180	KENNAMETAL	CCMT 060202	XXX	10
28A 26 0181		CCMT 060204	XXX	10
28A 26 0182		CCMT 060208	XXX	10
28A 26 0184		CCMT 09T304	XXX	10
28A 26 0185		CCMT 09T308	XXX	10
28A 26 0187		CCMT 120404	XXX	10
28A 26 0188		CCMT 120408	XXX	10
●			UNI	
⚙			●	
Chip breaker			73	
a_p		mm	0.2 – 5	
f		mm/rev.	0.1 – 0.45	
v_c main application		m/min	30 – 440	



Grade			PV720	CA510	CA515	CA525	PR1425	CA6525	CA4515	KW10	
25E 26 0190		CC.T 060202	XXX	XXX	XXX	XXX	XXX	XXX	–	–	10
25E 26 0192		CC.T 060204	XXX	XXX	XXX	XXX	XXX	XXX	(XXX)	–	10
25E 26 0194		CC.T 09T302	XXX	XXX	XXX	XXX	XXX	XXX	–	–	10
25E 26 0196	KYOCERA	CC.T 09T304	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	10
25E 26 0202		CCMT 120404	XXX	XXX	XXX	XXX	–	XXX	(XXX)	–	10
25E 26 0204		CCMT 120408	XXX	XXX	XXX	XXX	–	XXX	XXX	–	10
25E 26 0206		CCMT 120412	–	XXX	XXX	XXX	–	XXX	–	–	10
●			P	P	P	P	M	M	K	N	
⚙			●	●	●	◪	●	◪	◪	●	
Chip breaker			GK	GK	GK	GK	MFP-GQ	GK	GK	AH	
Tolerance			M	M	M	M	G	M	M	G	
a_p		mm	0.5 – 3	0.5 – 3	0.5 – 3	0.5 – 3	1 – 3	0.5 – 3	0.5 – 3	0.5 – 3	
f		mm/rev.	0.1 – 0.3	0.1 – 0.3	0.1 – 0.3	0.1 – 0.3	0.05 – 0.15	0.1 – 0.3	0.1 – 0.3	0.05 – 0.25	
v_c main application		m/min	60 – 270	140 – 450	110 – 380	80 – 330	100 – 150	50 – 140	60 – 230	30 – 300	

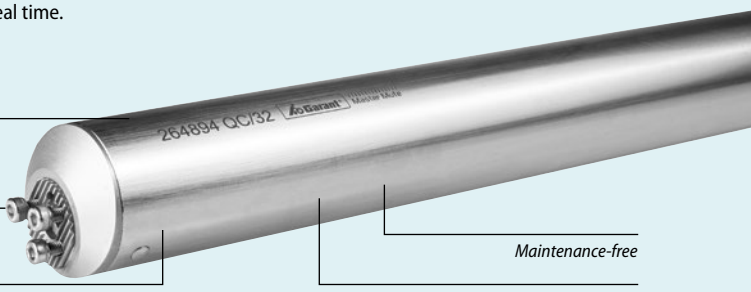
Grade			HBT020	HBT130	
22D 26 0210		CCMT 060204	XXX	XXX	10
22D 26 0211		CCMT 09T304	XXX	XXX	10
22D 26 0213	HOLEX	CCMT 09T308	XXX	XXX	10
22D 26 0219		CCMT 120404	XXX	XXX	10
22D 26 0221		CCMT 120408	XXX	XXX	10
●			P	M	
⚙			◪	◪	
Chip breaker			PM	MM	
a_p		mm	0.5 – 2.5	0.3 – 3	
f		mm/rev.	0.12 – 0.3	0.05 – 0.35	
v_c main application		m/min	70 – 250	40 – 220	

GARANT Master Mute

new

Vibration damping by plug-and-play!

The new vibration-damping GARANT boring bars adapt to the machining conditions in real time.
High component quality at long overhang lengths – simple and reliable.



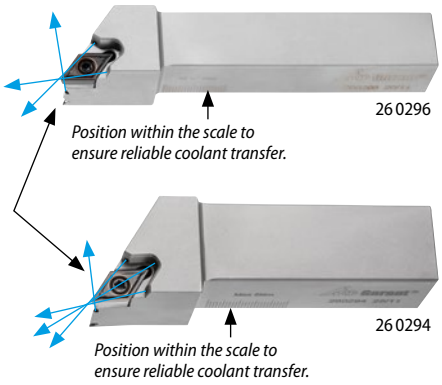
You can find our new range of vibration-damping tools in compact format on pages 700 – 702.

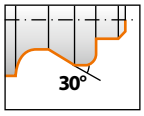
DIN ISO 5610

SDJC 93° eco screw-on toolholder for indexable inserts DC..

GARANT eco system screw-on toolholder with internal coolant feed to the cutter. Cooling by means of precision nozzles effectively and efficiently reduces the thermal loading, since the coolant stream is optimally directed between the chip and cutting edge. This results in higher productivity, longer tool life and higher process reliability.

Note: Coolant transfer only in conjunction with GARANT eco-system toolholders No. 317900 – 319886.



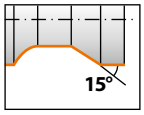


Shank / insert size	21U 26 0296	21U 26 0297	ISO code toolholder	suitable indexable insert				Pack of insert screws	Shim	Shim screw
	eco screw-on toolholder									
mm	right-hand	left-hand			mm	mm	mm			
16/11	XXX	XXX	SDJCR/L 1616H11	DC.. 11T3..	20	29	100	269023 3	269007 1	269013 1
20/11	XXX	XXX	SDJCR/L 2020K11	DC.. 11T3..	25	32	125	269023 3	269007 1	269013 1
25/11	XXX	XXX	SDJCR/L 2525M11	DC.. 11T3..	32	32	150	269023 3	269007 1	269013 1

Shank / insert size	21U 26 0294	21U 26 0295	ISO code toolholder	suitable indexable insert				Pack of insert screws	Shim	Shim screw
	eco screw-on toolholder, short									
mm	right-hand	left-hand			mm	mm	mm			
16/11	XXX	XXX	SDJCR/L 1616X11	DC.. 11T3..	20	29	74	269023 3	269007 1	269013 1
20/11	XXX	XXX	SDJCR/L 2020X11	DC.. 11T3..	25	32	92	269023 3	269007 1	269013 1
25/11	XXX	XXX	SDJCR/L 2525X11	DC.. 11T3..	32	32	104.5	269023 3	269007 1	269013 1

DIN ISO 5610

SDHC 107.5° screw-on toolholder for indexable inserts DC..

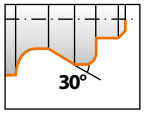


26 0306

Shank / insert size	21T 26 0306	21T 26 0307	ISO code toolholder	suitable indexable insert				Pack of insert screws	Shim	Shim screw
	Screw-on toolholder									
mm	right-hand	left-hand			mm	mm	mm			
10/07	XXX	XXX	SDHCR/L 1010E07	DC.. 0702..	12	7	70	269028 22	–	–
12/07	XXX	XXX	SDHCR/L 1212F07	DC.. 0702..	16	12	80	269028 22	–	–
16/11	XXX	XXX	SDHCR/L 1616H11	DC.. 11T3..	20	12	100	269028 2	269005 3	269013 2
20/11	XXX	XXX	SDHCR/L 2020K11	DC.. 11T3..	25	15	125	269028 2	269005 3	269013 2
25/11	XXX	XXX	SDHCR/L 2525M11	DC.. 11T3..	32	21	150	269028 2	269005 3	269013 2

DIN ISO 5610

SDJC 93° screw-on toolholder for indexable inserts DC..

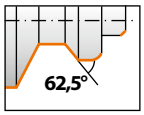


26 0308

Shank / insert size	21T 26 0308	21T 26 0309	ISO code toolholder	suitable indexable insert				Pack of insert screws	Shim	Shim screw
	Screw-on toolholder									
mm	right-hand	left-hand			mm	mm	mm			
08/07	XXX	XXX	SDJCR/L 0808D07	DC.. 0702..	10	13	60	269028 22	–	–
10/07	XXX	XXX	SDJCR/L 1010E07	DC.. 0702..	12	13	70	269028 22	–	–
12/07	XXX	XXX	SDJCR/L 1212F07	DC.. 0702..	16	17	80	269028 22	–	–
16/11	XXX	XXX	SDJCR/L 1616H11	DC.. 11T3..	20	20	100	269028 2	269005 3	269013 2
20/11	XXX	XXX	SDJCR/L 2020K11	DC.. 11T3..	25	20.5	125	269028 2	269005 3	269013 2
25/11	XXX	XXX	SDJCR/L 2525M11	DC.. 11T3..	32	21.5	150	269028 2	269005 3	269013 2

DIN ISO 5610

Garant SDNCN 62.5° screw-on toolholders for indexable inserts DC..

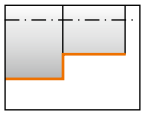


26 0300

Shank / insert size	21T 26 0300 Screw-on toolholder	ISO code toolholder	suitable indexable insert				Pack of insert screws	Shim	Shim screw
mm	neutral			mm	mm	mm			
08/07	XXX	SDNCN 0808D07	DC.. 0702..	4	7.5	60	269028 22	–	–
10/07	XXX	SDNCN 1010E07	DC.. 0702..	5	9.5	70	269028 22	–	–
12/07	XXX	SDNCN 1212F07	DC.. 0702..	6	11	80	269028 22	–	–
16/11	XXX	SDNCN 1616H11	DC.. 11T3..	8	16	100	269028 2	269005 3	269013 2
20/11	XXX	SDNCN 2020K11	DC.. 11T3..	10	20	125	269028 2	269005 3	269013 2
25/11	XXX	SDNCN 2525M11	DC.. 11T3..	12.5	25	150	269028 2	269005 3	269013 2

DIN ISO 5610

Garant SDAC 90° screw-on toolholder for indexable inserts DC..

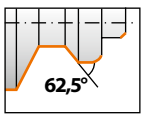


26 0298

Shank / insert size	21T 26 0298	21T 26 0299 Screw-on toolholder	ISO code toolholder	suitable indexable insert				Pack of insert screws
mm	right-hand	left-hand			mm	mm	mm	
8/07	XXX	XXX	SDACR/L 0808M07	DC.. 0702..	8	12.7	150	269021 1
10/07	XXX	XXX	SDACR/L 1010M07	DC.. 0702..	10	15	150	269021 1
12/07	XXX	XXX	SDACR/L 1212M07	DC.. 0702..	12	15	150	269021 1
16/07	XXX	XXX	SDACR/L 1616M07	DC.. 0702..	16	16	150	269021 1
12/11	XXX	XXX	SDACR/L 1212M11	DC.. 11T3..	12	18	150	269021 2
16/11	XXX	XXX	SDACR/L 1616M11	DC.. 11T3..	16	20	150	269021 2

DIN ISO 5610

Garant SDNCN 62.5° screw-on toolholders for indexable inserts DC..

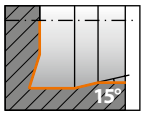


26 0301

Shank / insert size	21T 26 0301 Screw-on toolholder	ISO code toolholder	suitable indexable insert				Pack of insert screws
mm	neutral			mm	mm	mm	
10/07	XXX	SDNCN 1010M07	DC.. 0702..	5.2	15	150	269021 1
12/11	XXX	SDNCN 1212M11	DC.. 11T3..	6.2	21	150	269021 2
16/11	XXX	SDNCN 1616M11	DC.. 11T3..	8.6	21	150	269021 2

8×D | Carbide | DIN 8024

E..SDQC 107.5° boring bars for indexable inserts DC..

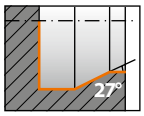


26 0320

Shank ∅ / insert size	21T 26 0320	21T 26 0321	ISO code toolholder	suitable indexable insert	∅ D_{min}						Pack of insert screws
	Boring bar carbide										
mm	right-hand	left-hand			mm	mm	mm	mm	mm	mm	
0408/04	XXX	XXX	E0408F SDQCR/L04	DC.. 04T0..	5.6	3	7.5	4	26	80	269028 26
08/07	XXX	XXX	E08K SDQCR/L07	DC.. 0702..	12	7	7.6	–	–	125	269028 7
10/07	XXX	XXX	E10K SDQCR/L07	DC.. 0702..	13	7	9.6	–	–	125	269028 7
12/07	XXX	XXX	E12M SDQCR/L07	DC.. 0702..	16	8.5	11.6	–	–	150	269028 7
16/07	XXX	XXX	E16R SDQCR/L07	DC.. 0702..	20	10	15.6	–	–	200	269028 7
20/11	XXX	XXX	E20S SDQCR/L11	DC.. 11T3..	25	12.5	18.9	–	–	250	269028 8
25/11	XXX	XXX	E25S SDQCR/L11	DC.. 11T3..	32	16	24	–	–	250	269028 8

8×D | Carbide | DIN 8024

E..SDUC 93° boring bars for indexable inserts DC..



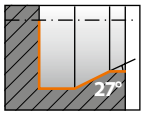
26 0318

Shank ∅ / insert size	21T 26 0318	21T 26 0319	ISO code toolholder	suitable indexable insert	∅ D_{min}						Pack of insert screws
	Boring bar carbide										
mm	right-hand	left-hand			mm	mm	mm	mm	mm	mm	
0408/04	XXX	XXX	E0408F SDUCR/L04	DC.. 04T0..	5.6	3	7.5	4	26	80	269028 26
8/07	XXX	XXX	E08K SDUCR/L07	DC.. 0702..	12.5	7.5	7.6	–	–	125	269028 7
10/07	XXX	XXX	E10K SDUCR/L07	DC.. 0702..	12.5	7	9.6	–	–	125	269028 7
12/07	XXX	XXX	E12M SDUCR/L07	DC.. 0702..	15	9	11.6	–	–	150	269028 7
16/07	XXX	XXX	E16R SDUCR/L07	DC.. 0702..	19	11	15.6	–	–	200	269028 7
20/11	XXX	XXX	E20S SDUCR/L11	DC.. 11T3..	23.5	13.1	18.9	–	–	250	269028 8
25/11	XXX	XXX	E25S SDUCR/L11	DC.. 11T3..	32	16	24	–	–	250	269028 8

8×D | Carbide | DIN 8024

E..SDUC 93° boring bar sets for indexable inserts DC..

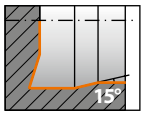
26 0324



29W 26 0324	29W 26 0325	ISO code toolholder	suitable indexable insert	∅ D_{min}				Pack of insert screws
Boring bar set carbide								
right-hand	left-hand			mm	mm	mm	mm	
XXX	XXX	E10K SDUCR/L07; E12M SDUCR/L07	DC.. 0702..	12; 15	7; 9	9.6; 11.6	125; 150	269028 7

5×D | HSS | DIN 8024

AH..SDQC 107.5° boring bars for indexable inserts DC..

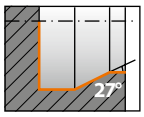


26 0328

Shank ∅ / insert size	21T 26 0328	21T 26 0329	ISO code toolholder	suitable indexable insert	∅ D_{min}				Pack of insert screws
	Boring bar HSS								
mm	right-hand	left-hand			mm	mm	mm	mm	
10/07	XXX	XXX	AH10K SDQCR/L07	DC.. 0702..	13	8	9	125	269028 7
12/07	XXX	XXX	AH12M SDQCR/L07	DC.. 0702..	16	9.5	11	150	269028 7
16/07	XXX	XXX	AH16Q SDQCR/L07	DC.. 0702..	20	12	15	180	269028 7
20/11	XXX	XXX	AH20R SDQCR/L11	DC.. 11T3..	25	14.5	18	200	269028 8
25/11	XXX	XXX	AH25R SDQCR/L11	DC.. 11T3..	32	17	23	200	269028 8

5×D | HSS | DIN 8024

AH..SDUC 93° boring bars for indexable inserts DC..

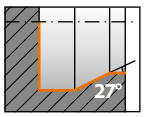


26 0332

Shank ∅ / insert size	21T 26 0332	21T 26 0333	ISO code toolholder	suitable indexable insert	∅ D_{min}						Pack of insert screws
	Boring bar HSS										
mm	right-hand	left-hand			mm	mm	mm	mm	mm	mm	
0810/07	XXX	XXX	AH0810H SDUCR/L07	DC.. 0702..	12.5	7	9	8	22	100	269028 7
10/07	XXX	XXX	AH10K SDUCR/L07	DC.. 0702..	14	8.3	9	–	–	125	269028 7
1012/07	XXX	XXX	AH1012K SDUCR/L07	DC.. 0702..	15.5	9	11	10	28	125	269028 7
12/07	XXX	XXX	AH12M SDUCR/L07	DC.. 0702..	16	9.3	11	–	–	150	269028 7
1216/07	XXX	XXX	AH1216M SDUCR/L07	DC.. 0702..	19.5	11	15	12	36	150	269028 7
16/07	XXX	XXX	AH16Q SDUCR/L07	DC.. 0702..	20	11.3	15	–	–	180	269028 7
20/11	XXX	XXX	AH20R SDUCR/L11	DC.. 11T3..	26	16.1	18	–	–	200	269028 8
25/11	XXX	XXX	AH25R SDUCR/L11	DC.. 11T3..	32	18.6	23	–	–	200	269028 8

5×D | HSS | DIN 8024

AH..SDUC 93° boring bar sets for indexable inserts DC..



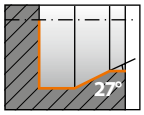
26 0334

29W 26 0334	29W 26 0335	ISO code toolholder	suitable indexable insert	∅ D_{min}						Pack of insert screws
Boring bar set HSS										
right-hand	left-hand			mm	mm	mm	mm	mm	mm	
XXX	XXX	AH0810H SDUCR/L07; AH1012K SDUCR/L07; AH1216M SDUCR/L07	DC.. 0702..	12.5; 15.5; 19.5	7; 9; 11	9; 11; 15	8; 10; 12	22; 28; 36	100; 125; 150	269028 7

5×D | DIN 8024

KYOCERA A..SDUC 93° Dynamic Bar for indexable inserts DC..

Streamlined flutes for improved chip evacuation, reduced tendency to vibrate, stable machining conditions.

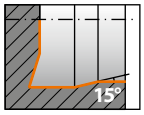


26 0338

Shank ∅ / insert size	25U 26 0338 Boring bar steel right-hand	25U 26 0339 Boring bar steel left-hand	ISO code toolholder	suitable indexable insert	∅ D_{min}				Insert screw
mm					mm	mm	mm	mm	
10/07	XXX	XXX	A10L SDUCR/L07	DC.. 0702..	14	8.7	9	140	269022 4
12/07	XXX	XXX	A12M SDUCR/L07	DC.. 0702..	16	9.7	11	150	269022 4
16/07	XXX	XXX	A16Q SDUCR/L07	DC.. 0702..	20	11.7	15	180	269022 4
16/11	XXX	XXX	A16Q SDUCR/L11	DC.. 11T3..	23	14.5	15	180	269022 3
20/11	XXX	XXX	A20R SDUCR/L11	DC.. 11T3..	27	16.5	19	200	269022 3
25/11	XXX	XXX	A25S SDUCR/L11	DC.. 11T3..	32	19	24	250	269022 3

3×D | DIN 8024

Garant A..SDUC 107.5° boring bars for indexable inserts DC..

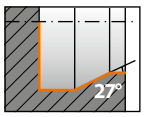


26 0340

Shank ∅ / insert size	21T 26 0340 Boring bar, steel right-hand	21T 26 0341 Boring bar, steel left-hand	ISO code toolholder	suitable indexable insert	∅ D_{min}						Pack of insert screws	Shim	Shim screw
mm					mm	mm	mm	mm	mm	mm			
0408/04	XXX	XXX	A0408F SDQCR/L04	DC.. 04T0..	5.2	2.6	7.5	4	15	80	269028 26	–	–
0810/07	XXX	XXX	A0810H SDQCR/L07	DC.. 0702..	12.5	6.4	9	8.4	22.4	100	269028 7	–	–
10/07	XXX	XXX	A10K SDQCR/L07	DC.. 0702..	14	7	9	–	–	125	269028 7	–	–
1012/07	XXX	XXX	A1012K SDQCR/L07	DC.. 0702..	15.5	9	11	10.7	27.5	125	269028 7	–	–
12/07	XXX	XXX	A12L SDQCR/L07	DC.. 0702..	17	9	11	–	–	140	269028 7	–	–
1216/07	XXX	XXX	A1216M SDQCR/L07	DC.. 0702..	19.5	11	15	12	39.5	150	269028 7	–	–
16/07	XXX	XXX	A16Q SDQCR/L07	DC.. 0702..	22	11	14	–	–	180	269028 7	–	–
20/11	XXX	XXX	A20R SDQCR/L11	DC.. 11T3..	26	13	18	–	–	200	269028 8	–	–
25/11	XXX	XXX	A25R SDQCR/L11	DC.. 11T3..	32.5	17	24	–	–	200	269028 8	–	–
32/11	XXX	XXX	A32S SDQCR/L11	DC.. 11T3..	44	22	31	–	–	250	269028 24	269005 3	269013 4
40/11	XXX	XXX	A40T SDQCR/L11	DC.. 11T3..	49	27	39	–	–	300	269028 24	269005 3	269013 4

3×D | DIN 8024

Garant A..SDUC 93° boring bars for indexable inserts DC..

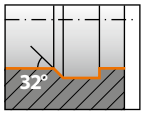


26 0342

Shank ∅ / insert size	21T 26 0342 Boring bar steel right-hand	21T 26 0343 Boring bar steel left-hand	ISO code toolholder	suitable indexable insert	∅ D_{min}						Pack of insert screws	Shim	Shim screw
mm					mm	mm	mm	mm	mm	mm			
0408/04	XXX	XXX	A0408F SDUCR/L04	DC.. 04T0..	5.2	3	7.5	4	15	80	269028 26	–	–
0810/07	XXX	XXX	A0810H SDUCR/L07	DC.. 0702..	12.5	6.5	9	7	22.5	100	269028 7	–	–
10/07	XXX	XXX	A10K SDUCR/L07	DC.. 0702..	13.5	7	9	–	–	125	269028 7	–	–
1012/07	XXX	XXX	A1012K SDUCR/L07	DC.. 0702..	15.5	9	11	9	27.5	125	269028 7	–	–
12/07	XXX	XXX	A12L SDUCR/L07	DC.. 0702..	16	9	11	–	–	140	269028 7	–	–
1216/07	XXX	XXX	A1216M SDUCR/L07	DC.. 0702..	18	11	15	12	40.5	150	269028 7	–	–
16/07	XXX	XXX	A16Q SDUCR/L07	DC.. 0702..	20	11	14	–	–	180	269028 7	–	–
20/11	XXX	XXX	A20R SDUCR/L11	DC.. 11T3..	25	13	18	–	–	200	269028 8	–	–
25/11	XXX	XXX	A25R SDUCR/L11	DC.. 11T3..	32	17	24	–	–	200	269028 8	–	–
32/11	XXX	XXX	A32S SDUCR/L11	DC.. 11T3..	40	22	31	–	–	250	269028 24	269005 3	269013 4
40/11	XXX	XXX	A40T SDUCR/L11	DC.. 11T3..	49	27	39	–	–	300	269028 24	269005 3	269013 4

3×D | DIN 8024

A..SDUC 93° boring bars for indexable inserts DC..



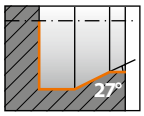
26 0344

Shank Ø / insert size	26 0344	26 0345	ISO code toolholder	suitable indexable insert	Ø D_{min}				Pack of insert screws
	Boring bar, steel								
mm	right-hand	left-hand			mm	mm	mm	mm	
08/04	XXX	XXX	A08F SDXCR/L04	DC.. 04T0..	9.2	5	7.5	80	269028 26
10/04	XXX	XXX	A10H SDXCR/L04	DC.. 04T0..	12.5	7	9	100	269028 26
12/07	XXX	XXX	A12L SDXCR/L07	DC.. 0702..	17	9	11	140	269028 7
16/07	XXX	XXX	A16Q SDXCR/L07	DC.. 0702..	21	11	15	180	269028 7
20/11	XXX	XXX	A20R SDXCR/L11	DC.. 11T3..	25	13	18	200	269028 21
25/11	XXX	XXX	A25R SDXCR/L11	DC.. 11T3..	31.5	17	23	200	269028 21

3×D | DIN 8024

SDUC 93° boring bar sets for indexable inserts DC..

26 0348 – Without through–coolant feed.



26 0346

Type	26 0346	26 0347	26 0348	ISO code toolholder		suitable indexable insert	Ø D_{min}						Pack of insert screws
	Boring bar set, steel, with IC		Boring bar set, steel, without IC	26 0346 26 0347	26 0348								
	right-hand	left-hand	right-hand				mm	mm	mm	mm	mm	mm	
SET07	XXX	XXX	XXX	A0810H SDUCR/L07; A1012K SDUCR/L07; A1216M SDUCR/L07	S0810H SDUCR07; S1012K SDUCR07; S1216M SDUCR07	DC.. 0702..	12; 15.5; 18	6.5; 9; 11	9; 11; 15	8; 10; 12	22.5; 27.5; 40.5	100; 125; 150	269028 7
SET11	XXX	XXX	–	A16Q SDUCR/L11; A20R SDUCR/L11; A25R SDUCR/L11	–	DC.. 11T3..	25; 27; 32	13.6; 16; 18.5	15; 18; 23	–	–	180; 200; 200	269028 14

Indexable inserts DC..

DC.. Finishing

Grade		CU7010	HB7010-1	HB7020	HB7025-1	HB7035-1	HB7120-1	HB7125-1	HB7140-1	HU7315-1	HB7410-1	HB7415	
26 0350	DCGT 04T002	–	–	–	XXX	–	–	XXX	–	XXX	–	–	10
26 0351	DCMT 070202	XXX	XXX	XXX	–	XXX	XXX	–	XXX	–	–	XXX	10
26 0353	DCMT 070204	XXX	XXX	XXX	–	XXX	XXX	–	XXX	–	–	XXX	10
26 0356	DCMT 11T302	XXX	XXX	XXX	–	XXX	XXX	–	XXX	–	–	XXX	10
26 0359	DC.T 11T304	XXX	XXX	XXX	–	XXX	XXX	–	XXX	–	XXX	XXX	10
26 0361	DCMT 11T308	–	XXX	XXX	–	XXX	XXX	–	XXX	–	–	XXX	10
●		P	P	P	P	P	M	M	M	N	Ti	S	
○		M	–	–	–	–	–	–	–	–	–	–	
Chip breaker		SS	SS	SS	SF	SS	VS	VF	VS	AF	TAS	TIS	
Tolerance		M	M	M	G	M	M	G	M	G	G	M	
a_p	mm	0.2 – 1.5	0.2 – 1.5	0.2 – 1.5	0.05 – 0.2	0.2 – 1.5	0.2 – 1.5	0.05 – 0.2	0.2 – 1.5	0.05 – 0.2	0.2 – 1.5	0.2 – 1	
f	mm/rev.	0.05 – 0.2	0.05 – 0.2	0.05 – 0.2	0.03 – 0.1	0.05 – 0.2	0.1 – 0.3	0.03 – 0.1	0.1 – 0.3	0.03 – 0.1	0.1 – 0.3	0.1	
v_c main application	m/min	90 – 210	150 – 500	150 – 400	120 – 300	120 – 350	90 – 290	120 – 300	70 – 260	120 – 300	60 – 90	60 – 70	
v_c secondary application	m/min	80 – 140	–	–	–	–	–	–	–	–	–	–	

Grade			SP4019	
28D 26 0366	KENNAMETAL	DCGX 0702005	XXX	10
28D 26 0367		DCGT 070201	XXX	10
28D 26 0368		DCGT 070202	XXX	10
28D 26 0369		DCGT 070204	XXX	10
28D 26 0372		DCGT 11T301	XXX	10
28D 26 0373		DCGT 11T302	XXX	10
28D 26 0374		DCGT 11T304	XXX	10
28D 26 0375		DCGT 11T308	XXX	10
●			UNI	
⚙			◍	
Chip breaker			62	
a_p		mm	0.15 – 3	
f		mm/rev.	0.05 – 0.3	
v_c main application		m/min	30 – 440	

Grade			PV720	CA510	CA515	CA525	PR1225	PR1425	CA6525	PDL025	PR1325	SW05	
25E 26 0380	KYOCERA	DCGT 070201	–	–	–	–	XXX	XXX	–	XXX	–	–	10
25E 26 0381		DC.T 070202	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	10
25E 26 0382		DC.T 070204	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	10
25E 26 0383		DCMX 070204 Wiper	XXX	XXX	XXX	XXX	XXX	XXX	–	–	–	–	10
25E 26 0384		DCGT 11T301	–	–	–	–	XXX	XXX	–	XXX	–	–	10
25E 26 0385		DC.T 11T302	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	–	–	10
25E 26 0386		DC.T 11T304	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	10
25E 26 0388		DCMX 11T304 Wiper	XXX	XXX	XXX	XXX	XXX	XXX	–	–	–	–	10
25E 26 0387		DCMT 11T308	XXX	XXX	XXX	XXX	–	–	–	–	XXX	XXX	10
●			P	P	P	P	P	M	M	N	S	Ti	
○			–	–	–	–	M	–	–	–	–	–	
⚙			◍	◍	◍	◪	◪	◍	◪	◪	◪	◍	
Chip breaker (26 0380, 26 0381, 26 0382, 26 0384, 26 0385, 26 0386, 26 0387)			HQ	HQ	HQ	HQ	MFP-SK	MFP-GF	MQ	MFP-SK	MQ	MQ	
Chip breaker (26 0383, 26 0388)			WP	WP	WP	WP	WP	WP	–	–	–	–	
Tolerance (26 0380, 26 0381, 26 0382, 26 0384, 26 0385, 26 0386, 26 0387)			M	M	M	M	G	G	M	G	M	M	
Tolerance (26 0383, 26 0388)			M	M	M	M	M	M	–	–	–	–	
a_p		mm	0.5 – 1.5	0.5 – 1.5	0.5 – 1.5	0.5 – 1.5	0.05 – 2.5	0.05 – 1.2	0.5 – 1.5	0.5 – 2.5	0.1 – 1	0.1 – 1	
f		mm/rev.	0.05 – 0.25	0.05 – 0.25	0.05 – 0.25	0.05 – 0.25	0.03 – 0.15	0.03 – 0.12	0.05 – 0.25	0.03 – 0.15	0.05 – 0.2	0.05 – 0.2	
v_c main application		m/min	60 – 270	140 – 450	100 – 390	80 – 330	50 – 150	100 – 150	50 – 140	100 – 300	50 – 100	40 – 100	
v_c secondary application		m/min	–	–	–	–	50 – 110	–	–	–	–	–	

Grade			HBT020	HBT130	
22D 26 0376	HOLEX	DCMT 070204	XXX	XXX	10
22D 26 0378		DCMT 11T304	XXX	XXX	10
●			P	M	
⚙			◪	◪	
Chip breaker			PF	M	
a_p		mm	0.4 – 1.5	0.1 – 1	
f		mm/rev.	0.1 – 0.3	0.05 – 0.2	
v_c main application		m/min	70 – 250	40 – 220	

DC.T Medium machining

Grade			CB7010	HB7010-1	HB7020	HB7035-1	HB7120-1	HB7140-1	HB7210-1	HU7310	HB7310	HB725	HB730-1	
21G 26 0449		DC.T 070202	–	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	–	XXX	10
21G 26 0452		DC.T 070204	–	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	–	10
21G 26 0458	Garant	DC.T 11T302	XXX	XXX	XXX	XXX	XXX	XXX	–	XXX	XXX	–	–	10
21G 26 0462		DC.T 11T304	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	10
21G 26 0464		DC.T 11T308	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	10
●			P	P	P	P	M	M	K	N	N	UNI	UNI	
○			M	–	–	–	–	–	–	–	–	–	–	
⚙			◍	◍	◪	◔	◍	◪	◍	◍	◍	◪	◪	
Chip breaker			SM	SM	SM	SM	VM	VM	GM	AM	AM	UM	XUM	
Tolerance			M	M	M	M	M	M	M	G	G	M	M	
a_p		mm	0.2 – 2	0.5 – 2.5	0.5 – 2.5	0.5 – 2.5	0.5 – 2.5	0.5 – 2.5	0.2 – 2.5	0.1 – 4	0.1 – 4	0.2 – 4	0.4 – 3.3	
f		mm/rev.	0.1 – 0.3	0.1 – 0.3	0.1 – 0.3	0.1 – 0.3	0.1 – 0.3	0.1 – 0.3	0.1 – 0.25	0.05 – 0.5	0.05 – 0.5	0.05 – 0.5	0.15 – 0.35	
v_c main application		m/min	90 – 240	120 – 440	120 – 350	100 – 320	80 – 260	60 – 230	100 – 450	350 – 600	350 – 600	50 – 250	35 – 230	
v_c secondary application		m/min	70 – 180	–	–	–	–	–	–	–	–	–	–	

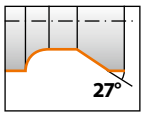
Grade			SP4019	
28D 26 0470		DCMT 070202	XXX	10
28D 26 0471	KENNAMETAL	DCMT 070204	XXX	10
28D 26 0474		DCMT 11T304	XXX	10
28D 26 0475		DCMT 11T308	XXX	10
●			UNI	
⚙			◍	
Chip breaker			73	
a_p		mm	0.2 – 4.5	
f		mm/rev.	0.1 – 0.45	
v_c main application		m/min	30 – 440	

Grade			PV720	CA510	CA515	CA525	PR1425	CA6525	CA4515	KW10	
25E 26 0481		DC.T 070202	XXX	–	XXX	XXX	XXX	XXX	–	–	10
25E 26 0483		DC.T 070204	XXX	–	XXX	XXX	XXX	XXX	XXX	–	10
25E 26 0486	KYOCERA	DCMT 070208	XXX	XXX	XXX	XXX	–	XXX	XXX	–	10
25E 26 0488		DC.T 11T302	XXX	XXX	XXX	XXX	XXX	XXX	–	–	10
25E 26 0490		DC.T 11T304	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	10
25E 26 0492		DC.T 11T308	XXX	XXX	XXX	XXX	–	XXX	XXX	XXX	10
●			P	P	P	P	M	M	K	N	
⚙			◍	◍	◍	◪	◍	◪	◪	◍	
Chip breaker			GK	GK	GK	GK	MFP-GQ	GK	GK	AH	
Tolerance			M	M	M	M	G	M	M	G	
a_p		mm	0.5 – 3	0.5 – 3	0.5 – 3	0.5 – 3	1 – 3	0.5 – 3	0.5 – 3	0.5 – 3	
f		mm/rev.	0.1 – 0.3	0.1 – 0.3	0.1 – 0.3	0.1 – 0.3	0.05 – 0.15	0.1 – 0.3	0.1 – 0.3	0.05 – 0.25	
v_c main application		m/min	60 – 270	140 – 450	110 – 390	80 – 330	100 – 150	50 – 140	60 – 230	30 – 300	

Grade			HBT020	HBT130	
22D 26 0500		DCMT 070204	XXX	XXX	10
22D 26 0503	HOLEX	DCMT 11T302	XXX	XXX	10
22D 26 0507		DCMT 11T304	XXX	XXX	10
22D 26 0508		DCMT 11T308	XXX	XXX	10
●			P	M	
⚙			◪	◪	
Chip breaker			PM	MM	
a_p		mm	0.5 – 2.5	0.3 – 2.5	
f		mm/rev.	0.12 – 0.3	0.05 – 0.35	
v_c main application		m/min	70 – 250	40 – 220	

DIN ISO 5610

Garant SRGC screw-on toolholder for indexable inserts RC..

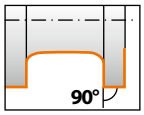


26 0606

Shank / insert size	21T 26 0606	21T 26 0607	ISO code toolholder	suitable indexable insert				Pack of insert screws	Shim	Shim screw
	Screw-on toolholder									
mm	right-hand	left-hand			mm	mm	mm			
12/06	XXX	XXX	SRGCR/L 1212F06	RC.T 0602	16	13.6	80	269028 22	–	–
16/06	XXX	XXX	SRGCR/L 1616H06	RC.T 0602	20	13.6	100	269028 22	–	–
20/06	XXX	XXX	SRGCR/L 2020K06	RC.T 0602	25	15.3	125	269028 22	–	–
25/06	XXX	XXX	SRGCR/L 2525M06	RC.T 0602	32	15.3	150	269028 22	–	–
16/08	XXX	XXX	SRGCR/L 1616H08	RC.T 0803	20	18.8	100	269028 29	–	–
20/08	XXX	XXX	SRGCR/L 2020K08	RC.T 0803	25	14.7	125	269028 29	–	–
25/08	XXX	XXX	SRGCR/L 2525M08	RC.T 0803	32	19.8	150	269028 29	–	–
16/10	XXX	XXX	SRGCR/L 1616H10	RC.T 1003	20	15.5	100	269028 1	269005 11	269013 4
20/10	XXX	XXX	SRGCR/L 2020K10	RC.T 1003	25	17	125	269028 1	269005 11	269013 4
25/10	XXX	XXX	SRGCR/L 2525M10	RC.T 1003	32	21	150	269028 1	269005 11	269013 4

DIN ISO 5610

Garant SRDCN screw-on toolholder for indexable inserts RC..



26 0611

Shank / insert size	21T 26 0611	ISO code toolholder	suitable indexable insert				Pack of insert screws	Shim	Shim screw
	Screw-on toolholder								
mm	neutral			mm	mm	mm			
12/06	XXX	SRDCN 1212F06	RC.T 0602	9	12.4	80	269028 22	–	–
16/06	XXX	SRDCN 1616H06	RC.T 0602	11	12.4	100	269028 22	–	–
20/06	XXX	SRDCN 2020K06	RC.T 0602	13	12.4	125	269028 22	–	–
25/06	XXX	SRDCN 2525M06	RC.T 0602	15.5	12.4	150	269028 22	–	–
16/08	XXX	SRDCN 1616H08	RC.T 0803	12	16.4	100	269028 29	–	–
20/08	XXX	SRDCN 2020K08	RC.T 0803	14	16.4	125	269028 29	–	–
25/08	XXX	SRDCN 2525M08	RC.T 0803	16.5	16.4	150	269028 29	–	–
16/10	XXX	SRDCN 1616H10	RC.T 1003	13	20.3	100	269028 1	269005 11	269013 4
20/10	XXX	SRDCN 2020K10	RC.T 1003	15	20.3	125	269028 1	269005 11	269013 4
25/10	XXX	SRDCN 2525M10	RC.T 1003	17.5	20.3	150	269028 1	269005 11	269013 4
20/12	XXX	SRDCN 2020K12	RC.T 1204	16	20.3	125	269028 24	269005 10	269013 4
25/12	XXX	SRDCN 2525M12	RC.T 1204	18.5	20.3	150	269028 24	269005 10	269013 4

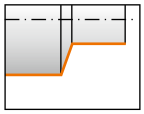
Garant Indexable inserts RC..

RC.. Medium machining

Grade		HB7010-1	HB7020	HB7035-1	HB7120-1	HB7140-1	HU7310-1	HB725	
21G 26 0620	RC.T 0602	–	–	–	–	–	XXX	XXX	10
21G 26 0630	RC.T 0803	–	–	–	–	–	XXX	XXX	10
21G 26 0640	RC.T 1003	XXX	XXX	XXX	XXX	XXX	XXX	XXX	10
21G 26 0650	RC.T 1204	XXX	XXX	XXX	XXX	XXX	XXX	XXX	10
●		P	P	P	M	M	N	UNI	
⚙		●	●	●	●	●	●	●	
Chip breaker		SM	SM	SM	VM	VM	AM	UM	
Tolerance		M	M	M	M	M	G	M	
a_p	mm	0.5 – 2							
f	mm/rev.	0.1 – 0.3							
v_c main application	m/min	120 – 440	120 – 350	100 – 320	80 – 260	60 – 230	350 – 600	60 – 230	

DIN ISO 5610

Garant SSBC 75° screw-on toolholders for indexable inserts SC..

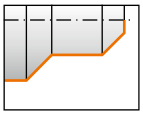


26 0704

Shank / insert size	21T 26 0704	21T 26 0705	ISO code toolholder	suitable indexable insert				Pack of insert screws	Shim	Shim screw
	Screw-on toolholder									
mm	right-hand	left-hand			mm	mm	mm			
16/09	XXX	XXX	SSBCR/L 1616H09	SC.. 09T3..	13	20	100	269028 2	269005 12	269013 2
20/12	XXX	XXX	SSBCR/L 2020K12	SC.. 1204..	17	20	125	269028 20	269005 9	269013 5
25/12	XXX	XXX	SSBCR/L 2525M12	SC.. 1204..	22	20	150	269028 20	269005 9	269013 5

DIN ISO 5610

Garant SSSC 45° screw-on toolholders for indexable inserts SC..

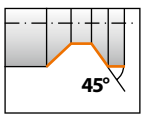


26 0706

Shank / insert size	21T 26 0706	21T 26 0707	ISO code toolholder	suitable indexable insert				Pack of insert screws	Shim	Shim screw
	Screw-on toolholder									
mm	right-hand	left-hand			mm	mm	mm			
8/09	XXX	XXX	SSSCR/L 0808D09	SC.. 09T3..	13.25	21	60	269028 23	–	–
10/09	XXX	XXX	SSSCR/L 1010E09	SC.. 09T3..	14.25	21	70	269028 23	–	–
12/09	XXX	XXX	SSSCR/L 1212F09	SC.. 09T3..	16	18	80	269028 2	–	–
16/09	XXX	XXX	SSSCR/L 1616H09	SC.. 09T3..	20	20	100	269028 2	269005 12	269013 2
20/09	XXX	XXX	SSSCR/L 2020K09	SC.. 09T3..	25	20	125	269028 2	269005 12	269013 2
20/12	XXX	XXX	SSSCR/L 2020K12	SC.. 1204..	25	27	125	269028 20	269005 9	269013 5
25/12	XXX	XXX	SSSCR/L 2525M12	SC.. 1204..	32	25	150	269028 20	269005 9	269013 5

DIN ISO 5610

Garant SSDCN 45° screw-on toolholders for indexable inserts SC..

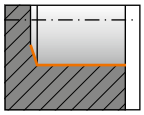


26 0711

Shank / insert size	21T 26 0711	ISO code toolholder	suitable indexable insert				Pack of insert screws	Shim	Shim screw
	Screw-on toolholder								
mm	neutral			mm	mm	mm			
12/09	XXX	SSDCN 1212F09	SC.. 09T3..	6	6	80	269028 2	269005 12	269013 2
16/09	XXX	SSDCN 1616H09	SC.. 09T3..	8	9	100	269028 2	269005 12	269013 2
20/09	XXX	SSDCN 2020K09	SC.. 09T3..	10	11	125	269028 2	269005 12	269013 2
16/12	XXX	SSDCN 1616H12	SC.. 1204..	8	8.7	100	269028 20	269005 9	269013 5
20/12	XXX	SSDCN 2020K12	SC.. 1204..	10	11.2	125	269028 20	269005 9	269013 5
25/12	XXX	SSDCN 2525M12	SC.. 1204..	12.5	13.7	150	269028 20	269005 9	269013 5

3×D | DIN 8024

A.. SSKC 75° boring bars for indexable inserts SC..



26 0724

Shank ∅ / insert size	21T 26 0724	21T 26 0725	ISO code toolholder	suitable indexable insert	∅ D_{min}				Pack of insert screws
	Boring bar, steel								
mm	right-hand	left-hand			mm	mm	mm	mm	
16/09	XXX	XXX	A16M SSKCR/L09	SC.. 09T3..	20	11	15.25	150	269028 14
20/09	XXX	XXX	A20Q SSKCR/L09	SC.. 09T3..	25	13	19	180	269028 14
25/12	XXX	XXX	A25R SSKCR/L12	SC.. 1204..	32	17	24	200	269028 25

Indexable inserts SC..

SCMT Finish machining

Grade			HB7010-1	HB7020	HB7035-1	HB7120-1	HB7140-1	HB7415	
21G 26 0742	Garant	SCMT 09T304	XXX	XXX	XXX	XXX	XXX	XXX	10
21G 26 0744		SCMT 09T308	XXX	XXX	XXX	XXX	XXX	XXX	10
21G 26 0748		SCMT 120404	XXX	XXX	XXX	XXX	XXX	XXX	10
21G 26 0750		SCMT 120408	XXX	XXX	XXX	XXX	XXX	XXX	10
●			P	P	P	M	M	S	
⚙									
Chip breaker			SS	SS	SS	VS	VS	TIS	
a_p		mm	0.2 – 1.5	0.2 – 1.5	0.2 – 1.5	0.2 – 1.5	0.2 – 1.5	0.5 – 1	
f		mm/rev.	0.05 – 0.2	0.05 – 0.2	0.05 – 0.2	0.1 – 0.3	0.1 – 0.3	0.1	
v_c main application		m/min	150 – 500	150 – 400	120 – 350	90 – 290	70 – 260	60 – 70	

Grade			HBT020	HBT130	
22D 26 0758	HOLEX	SCMT 09T304	XXX	XXX	10
●			P	M	
⚙					
Chip breaker			PF	M	
a_p		mm	0.4 – 1.5	0.1 – 1	
f		mm/rev.	0.1 – 0.3	0.05 – 0.2	
v_c main application		m/min	70 – 250	40 – 220	

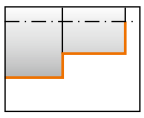
SC.T Medium machining

Grade			HB7010-1	HB7020	HB7035-1	HB7120-1	HB7140-1	HB7210-1	HU7310	HB7310	HB725	
21G 26 0761		SCGT 09T302	–	–	–	–	–	–	XXX	XXX	–	10
21G 26 0762		SC.T 09T304	XXX	XXX	XXX	XXX	XXX	–	XXX	XXX	XXX	10
21G 26 0763	Garant	SCMT 09T308	XXX	XXX	XXX	XXX	XXX	–	–	–	XXX	10
21G 26 0765		SC.T 120404	XXX	XXX	XXX	XXX	XXX	–	XXX	XXX	XXX	10
21G 26 0766		SC.T 120408	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	10
●			P	P	P	M	M	K	N	N	UNI	
⚙												
Chip breaker			SM	SM	SM	VM	VM	GM	AM	AM	UM	
Tolerance			M	M	M	M	M	M	G	G	M	
a_p		mm	0.5 – 2.5	0.5 – 2.5	0.5 – 2.5	0.5 – 2.5	0.5 – 2.5	0.2 – 2.5	0.1 – 4	0.1 – 4	0.2 – 4	
f		mm/rev.	0.1 – 0.3	0.1 – 0.3	0.1 – 0.3	0.1 – 0.3	0.1 – 0.3	0.1 – 0.25	0.05 – 0.5	0.05 – 0.5	0.05 – 0.5	
v_c main application		m/min	120 – 440	120 – 350	100 – 320	80 – 260	60 – 230	100 – 450	350 – 600	350 – 600	50 – 250	

Grade		HBT020	HBT130	
22D 26 0791	SCMT 09T404	XXX	XXX	10
22D 26 0793	HOLEX SCMT 120404	XXX	XXX	10
22D 26 0795	SCMT 120408	XXX	XXX	10
●		P	M	
⚙		▨	▨	
Chip breaker		PM	MM	
a_p	mm	0.5 – 2.5	0.3 – 2.5	
f	mm/rev.	0.12 – 0.3	0.05 – 0.35	
v_c main application	m/min	70 – 250	40 – 220	

DIN ISO 5610

STJC 93° screw-on toolholder for indexable inserts TC.

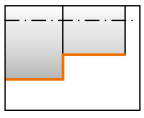


26 0904

Shank / insert size	21T 26 0904	21T 26 0905	ISO code toolholder	suitable indexable insert				Pack of insert screws
	Screw-on toolholder							
mm	right-hand	left-hand			mm	mm	mm	
10/11	XXX	XXX	STJCR/L 1010M11	TC.. 1102..	10	16	150	269021 1
12/11	XXX	XXX	STJCR/L 1212M11	TC.. 1102..	12	16	150	269021 1
16/11	XXX	XXX	STJCR/L 1616M11	TC.. 1102..	16	16	150	269021 1

DIN ISO 5610

STGC 90° screw-on toolholder for indexable inserts TC.

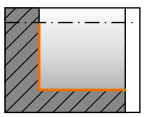


26 0906

Shank / insert size	21T 26 0906	21T 26 0907	ISO code toolholder	suitable indexable insert				Pack of insert screws	Shim	Shim screw
	Screw-on toolholder									
mm	right-hand	left-hand			mm	mm	mm			
12/11	XXX	XXX	STGCR/L 1212F11	TC.. 1102..	16	15	80	269028 18	–	–
16/11	XXX	XXX	STGCR/L 1616H11	TC.. 1102..	20	15	100	269028 18	–	–
16/16	XXX	XXX	STGCR/L 1616H16	TC.. 16T3..	20	22	100	269028 24	269005 7	269013 4
20/16	XXX	XXX	STGCR/L 2020K16	TC.. 16T3..	25	22	125	269028 24	269005 7	269013 4
25/16	XXX	XXX	STGCR/L 2525M16	TC.. 16T3..	32	22	150	269028 24	269005 7	269013 4

8×D | Carbide | DIN 8024

E..STFC 90° boring bars for indexable inserts TC..

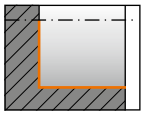


26 0918

Shank ∅ / insert size	21T 26 0918	21T 26 0919	ISO code toolholder	suitable indexable insert					Pack of insert screws
	Boring bar carbide								
mm	right-hand	left-hand			∅ D_{min} mm	mm	mm	mm	
10/11	XXX	XXX	E10K STFCR/L11	TC.. 1102..	12	6	9.6	125	269028 7
12/11	XXX	XXX	E12M STFCR/L11	TC.. 1102..	15	8	11.5	150	269028 7
16/11	XXX	XXX	E16R STFCR/L11	TC.. 1102..	19	10	15.4	200	269028 7

5×D | HSS | DIN 8024

AH..STFC 90° boring bars for indexable inserts TC..



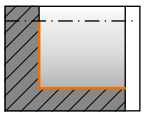
26 0922

Shank ∅ / insert size	21T 26 0922	21T 26 0923	ISO code toolholder	suitable indexable insert	∅ D_{min}				Pack of insert screws
	Boring bar HSS								
mm	right-hand	left-hand			mm	mm	mm	mm	
10/11	XXX	XXX	AH10K STFCR/L11	TC.. 1102..	12	7	9	125	269028 7
12/11	XXX	XXX	AH12M STFCR/L11	TC.. 1102..	14	9	11	150	269028 7
16/11	XXX	XXX	AH16Q STFCR/L11	TC.. 1102..	18	11	15	180	269028 7
20/11	XXX	XXX	AH20R STFCR/L11	TC.. 1102..	23	13	18	200	269028 7
25/16	XXX	XXX	AH25R STFCR/L16	TC.. 16T3..	28	17	23	200	269028 8

5×D | DIN 8024

KYOCERA A..STLC 95° Dynamic Bar for indexable inserts TC..

Streamlined flutes for improved chip evacuation, reduced tendency to vibrate, stable machining conditions.

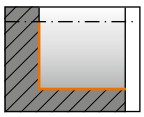


26 0930

Shank ∅ / insert size	25U 26 0930	25U 26 0931	ISO code toolholder	suitable indexable insert	∅ D_{min}				Insert screw
	Boring bar steel								
mm	right-hand	left-hand			mm	mm	mm	mm	
10/11	XXX	XXX	A10L STLCR/L11	TC.. 1102..	12	6.2	9	140	269022 4
12/11	XXX	XXX	A12M STLCR/L11	TC.. 1102..	14	7.2	11	150	269022 4
16/11	XXX	XXX	A16Q STLCR/L11	TC.. 1102..	18	9.2	15	180	269022 4
20/11	XXX	XXX	A20R STLCR/L11	TC.. 1102..	22	11.2	19	200	269022 4

3×D | DIN 8024

A..STFC 90° boring bars for indexable inserts TC..



26 0934

Shank ∅ / insert size	21T 26 0934	21T 26 0935	ISO code toolholder	suitable indexable insert	∅ D_{min}				Pack of insert screws	Shim	Shim screw
	Boring bar steel										
mm	right-hand	left-hand			mm	mm	mm	mm			
10/11	XXX	XXX	A10K STFCR/L11	TC.. 1102..	13	7	9	125	269028 7	–	–
12/11	XXX	XXX	A12L STFCR/L11	TC.. 1102..	16	9	11	140	269028 7	–	–
16/11	XXX	XXX	A16Q STFCR/L11	TC.. 1102..	20	11	15	180	269028 7	–	–
20/16	XXX	XXX	A20R STFCR/L16	TC.. 16T3..	25	13	18	200	269028 8	–	–
25/16	XXX	XXX	A25R STFCR/L16	TC.. 16T3..	32	17	23	200	269028 8	–	–
32/16	XXX	XXX	A32S STFCR/L16	TC.. 16T3..	40	22	30	250	269028 24	269005 7	269013 2
40/16	XXX	XXX	A40T STFCR/L16	TC.. 16T3..	49	27	39	300	269028 24	269005 7	269013 2

Indexable inserts TC..

TCMT Finish machining

Grade			CU7010	HB7010-1	HB7020	HB7035-1	HB7120-1	HB7140-1	HB7415	
21G 26 0950		TCMT 110202	–	XXX	XXX	XXX	XXX	XXX	XXX	10
21G 26 0952		TCMT 110204	XXX	XXX	XXX	XXX	XXX	XXX	XXX	10
21G 26 0954	Garant	TCMT 110208	–	XXX	XXX	XXX	XXX	XXX	XXX	10
21G 26 0956		TCMT 16T304	–	XXX	XXX	XXX	XXX	XXX	XXX	10
21G 26 0958		TCMT 16T308	–	XXX	XXX	XXX	XXX	XXX	XXX	10
●			P	P	P	P	M	M	S	
○			M	–	–	–	–	–	–	
⚙										
Chip breaker			SS	SS	SS	SS	VS	VS	TIS	
a_p		mm	0.2 – 1.5	0.2 – 1.5	0.2 – 1.5	0.2 – 1.5	0.2 – 1.5	0.2 – 1.5	0.2 – 1	
f		mm/rev.	0.05 – 0.2	0.05 – 0.2	0.05 – 0.2	0.05 – 0.2	0.1 – 0.3	0.1 – 0.3	0.1	
v_c main application		m/min	90 – 210	150 – 500	150 – 400	120 – 350	90 – 290	70 – 260	60 – 70	
v_c secondary application		m/min	80 – 140	–	–	–	–	–	–	

Grade			HBT020	HBT130	
22D 26 0966	HOLEX	TCMT 110204	XXX	XXX	10
22D 26 0968		TCMT 16T304	XXX	XXX	10
●			P	M	
⚙					
Chip breaker			PF	M	
a_p		mm	0.4 – 1.5	0.1 – 1	
f		mm/rev.	0.1 – 0.3	0.05 – 0.2	
v_c main application		m/min	70 – 250	40 – 220	

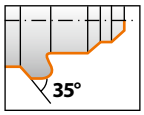
TC.T Medium machining

Grade			HB7010-1	HB7020	HB7035-1	HB7120-1	HB7140-1	HU7310	HB725	
21G 26 0980		TC.T 110202	XXX	XXX	XXX	XXX	XXX	XXX	–	10
21G 26 0982		TC.T 110204	XXX	XXX	XXX	XXX	XXX	XXX	XXX	10
21G 26 0984	Garant	TCMT 110208	–	–	–	–	–	–	XXX	10
21G 26 0986		TC.T 16T304	XXX	XXX	XXX	XXX	XXX	XXX	XXX	10
21G 26 0988		TCMT 16T308	XXX	XXX	XXX	XXX	XXX	–	XXX	10
●			P	P	P	M	M	N	UNI	
⚙										
Chip breaker			SM	SM	SM	VM	VM	AM	UM	
Tolerance			M	M	M	M	M	G	M	
a_p		mm	0.5 – 2.5	0.5 – 2.5	0.5 – 2.5	0.5 – 2.5	0.5 – 2.5	0.1 – 4	0.2 – 4	
f		mm/rev.	0.1 – 0.3	0.1 – 0.3	0.1 – 0.3	0.1 – 0.3	0.1 – 0.3	0.05 – 0.5	0.05 – 0.5	
v_c main application		m/min	120 – 440	120 – 350	100 – 320	80 – 260	60 – 230	350 – 600	50 – 250	

Grade			HBT020	HBT130	
22D 26 1012		TCMT 110204	XXX	XXX	10
22D 26 1018	HOLEX	TCMT 16T304	XXX	XXX	10
22D 26 1019		TCMT 16T308	XXX	XXX	10
●			P	M	
⚙					
Chip breaker			PM	MM	
a_p		mm	0.5 – 2.5	0.3 – 2.5	
f		mm/rev.	0.12 – 0.3	0.05 – 0.35	
v_c main application		m/min	70 – 250	40 – 220	

DIN ISO 5610

SVHB 107.5° screw-on toolholder for indexable inserts VB..



26 1106

Shank / insert size	21T 26 1106	21T 26 1107	ISO code toolholder	suitable indexable insert				Pack of insert screws	Shim	Shim screw
	Screw-on toolholder									
mm	right-hand	left-hand			mm	mm	mm			
12/11	XXX	XXX	SVHBR/L 1212F11	VB.. 1103..	16	13	80	269028 22	–	–
16/11	XXX	XXX	SVHBR/L 1616H11	VB.. 1103..	20	13	100	269028 22	–	–
20/11	XXX	XXX	SVHBR/L 2020K11	VB.. 1103..	25	17	125	269028 22	–	–
20/16	XXX	XXX	SVHBR/L 2020K16	VB.. 1604..	25	16	125	269028 2	269005 8	269013 2
25/16	XXX	XXX	SVHBR/L 2525M16	VB.. 1604..	32	21	150	269028 2	269005 8	269013 2

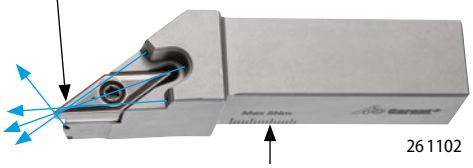
DIN ISO 5610

SVJB 93° eco screw-on toolholder for indexable inserts VB..

GARANT eco system screw-on toolholder with internal coolant feed to the cutting edge. Cooling by means of precision nozzles effectively and efficiently reduces the thermal loading, since the coolant stream is optimally directed between the chip and cutting edge. This results in higher productivity, longer tool life and higher process reliability.

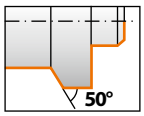
Note: Coolant transfer only in conjunction with GARANT eco-system toolholders No. 317900 – -319886.

Optimum washing of the cutting edge with coolant.



26 1102

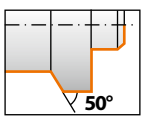
Positioning within the scale ensures precise coolant transfer.



Shank size / insert size	21U 26 1102	21U 26 1103	ISO code toolholder	suitable indexable insert				Pack of insert screws	Shim	Shim screw
	eco screw-on toolholder									
mm	right-hand	left-hand			mm	mm	mm			
16/11	XXX	XXX	SVJBR/L 1616X11	VB.. 1103..	20	34	81	269023 1	–	–
20/11	XXX	XXX	SVJBR/L 2020X11	VB.. 1103..	25	40	99	269023 1	–	–
20/16	XXX	XXX	SVJBR/L 2020X16	VB.. 1604..	25	40	99	269028 28	259033 5	269013 1
25/16	XXX	XXX	SVJBR/L 2525X16	VB.. 1604..	32	40	111.5	269028 28	259033 5	269013 1

DIN ISO 5610

SVJB 93° screw-on toolholder for indexable inserts VB..



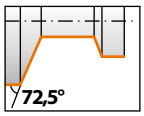
26 1108

Shank / insert size	21T 26 1108	21T 26 1109	ISO code toolholder	suitable indexable insert				Pack of insert screws	Shim	Shim screw
	Screw-on toolholder									
mm	right-hand	left-hand			mm	mm	mm			
12/11	XXX	XXX	SVJBR/L 1212F11	VB.. 1103..	16	21.5	80	269028 22	–	–
16/11	XXX	XXX	SVJBR/L 1616H11	VB.. 1103..	20	21.5	100	269028 22	–	–
20/11	XXX	XXX	SVJBR/L 2020K11	VB.. 1103..	25	23	125	269028 22	–	–
20/16	XXX	XXX	SVJBR/L 2020K16	VB.. 1604..	25	30	125	269028 2	269005 8	269013 2
25/16	XXX	XXX	SVJBR/L 2525M16	VB.. 1604..	32	33	150	269028 2	269005 8	269013 2

DIN ISO 5610

Garant SVVBN 72.5° screw-on toolholder for indexable inserts VB..

26 1111

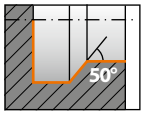


Shank / insert size	21T 26 1111 Screw-on toolholder	ISO code toolholder	suitable indexable insert				Pack of insert screws	Shim	Shim screw
mm	neutral			mm	mm	mm			
12/11	XXX	SVVBN 1212F11	VB.. 1103..	6	18.5	80	269028 22	–	–
16/11	XXX	SVVBN 1616H11	VB.. 1103..	8	25	100	269028 22	–	–
20/11	XXX	SVVBN 2020K11	VB.. 1103..	10	32	125	269028 22	–	–
25/11	XXX	SVVBN 2525M11	VB.. 1103..	12.5	39	150	269028 22	–	–
20/16	XXX	SVVBN 2020K16	VB.. 1604..	10	31	125	269028 2	269005 8	269013 2
25/16	XXX	SVVBN 2525M16	VB.. 1604..	12.5	39	150	269028 2	269005 8	269013 2

8×D | Carbide | DIN 8024

Garant E..SVUB 93° boring bars for indexable inserts VB..

26 1118



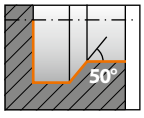
Shank ∅ / insert size	21T 26 1118	21T 26 1119	ISO code toolholder	suitable indexable insert					Pack of insert screws
	Boring bar carbide								
mm	right-hand	right-hand			∅ D_{min} mm	mm	mm	mm	
16/11	XXX	XXX	E16R SVUBR/L 11	VB.. 1103..	21	11	15	200	269028 7
20/11	XXX	XXX	E20S SVUBR/L 11	VB.. 1103..	25	13	18	250	269028 7
25/11	XXX	XXX	E25S SVUBR/L 11	VB.. 1103..	31.5	17	23	250	269028 7

5×D | DIN 8024

KYOCERA A..SVUB 93° dynamic bar for indexable inserts VB..

Streamlined flutes for improved chip evacuation, reduced tendency to vibrate, stable machining conditions.

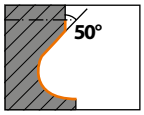
26 1120



Shank ∅ / insert size	25U 26 1120	25U 26 1121	ISO code toolholder	suitable indexable insert					Insert screw	Shim	Shim screw
	Boring bar steel										
mm	right-hand	left-hand			∅ D_{min} mm	mm	mm	mm			
16/11	XXX	XXX	A16Q SVUBR/L11	VB.. 1103..	20	16	15	180	269022 6	–	–
20/11	XXX	XXX	A20R SVUBR/L11	VB.. 1103..	25	18	19	200	269022 6	–	–
25/16	XXX	XXX	A25S SVUBR/L16	VB.. 1604..	34	20.5	24	250	269022 7	269006 1	269014 1
32/16	XXX	XXX	A32S SVUBR/L16	VB.. 1604..	40	28	31	250	269022 7	269006 1	269014 1

3×D | DIN 8024

A..SVJB 142° boring bars for indexable inserts VB..

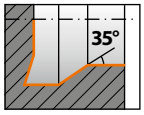


26 1124

Shank ∅ / insert size	21T 26 1124	21T 26 1125	ISO code toolholder	suitable indexable insert	∅ D_{min}						Pack of insert screws
	Boring bar steel										
mm	right-hand	left-hand			mm	mm	mm	mm	mm	mm	
16/11	XXX	XXX	A16M SVJBR/L11	VB.. 1103..	22	4.6	15	9.5	30	150	269028 7
20/11	XXX	XXX	A20Q SVJBR/L11	VB.. 1103..	25	4.6	19	11	38	180	269028 7
25/16	XXX	XXX	A25R SVJBR/L16	VB.. 1604..	28	4.6	24	16.5	44	200	269028 17

3×D | DIN 8024

A..SVQB 107.5° boring bars for indexable inserts VB..

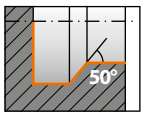


26 1130

Shank ∅ / insert size	21T 26 1130	21T 26 1131	ISO code toolholder	suitable indexable insert	∅ D_{min}				Pack of insert screws
	Boring bar steel								
mm	right-hand	left-hand			mm	mm	mm	mm	
16/11	XXX	XXX	A16Q SVQBR/L11	VB.. 1103..	21	11	15.5	180	269028 22
20/11	XXX	XXX	A20R SVQBR/L11	VB.. 1103..	25	13	19	200	269028 22
25/16	XXX	XXX	A25R SVQBR/L16	VB.. 1604..	32	17	23	200	269028 8

3×D | DIN 8024

A..SVJB 93° boring bars for indexable inserts VB..



26 1132

Shank ∅ / insert size	21T 26 1132	21T 26 1133	ISO code toolholder	suitable indexable insert	∅ D_{min}				Pack of insert screws	Shim	Shim screw
	Boring bar, steel										
mm	right-hand	left-hand			mm	mm	mm	mm			
16/11	XXX	XXX	A16Q SVUBR/L11	VB.. 1103..	21	11	15.5	180	269028 7	–	–
20/11	XXX	XXX	A20R SVUBR/L11	VB.. 1103..	25	13	18	200	269028 7	–	–
25/16	XXX	XXX	A25R SVUBR/L16	VB.. 1604..	32	17	24	200	269028 8	–	–
32/16	XXX	XXX	A32S SVUBR/L16	VB.. 1604..	40	22	31	250	269028 2	269005 8	269013 2
40/16	XXX	XXX	A40T SVUBR/L16	VB.. 1604..	49	27	39	300	269028 2	269005 8	269013 2

Indexable inserts VB. T

VBMT Finish machining

Grade			HB7010-1	HB7020	HB7035-1	HB7120-1	HB7140-1	HB7415	
21G 26 1142		VBMT 110302	XXX	XXX	XXX	XXX	XXX	XXX	10
21G 26 1144		VBMT 110304	XXX	XXX	XXX	XXX	XXX	XXX	10
21G 26 1150	Garant	VBMT 160402	XXX	XXX	XXX	XXX	XXX	XXX	10
21G 26 1152		VBMT 160404	XXX	XXX	XXX	XXX	XXX	XXX	10
21G 26 1154		VBMT 160408	XXX	XXX	XXX	XXX	XXX	XXX	10
●			P	P	P	M	M	S	
⚙									
Chip breaker			SS	SS	SS	VS	VS	TIS	
a_p		mm	0.2 – 1.5	0.2 – 1.5	0.2 – 1.5	0.2 – 1.5	0.2 – 1.5	0.2 – 1	
f		mm/rev.	0.05 – 0.2	0.05 – 0.2	0.05 – 0.2	0.1 – 0.3	0.1 – 0.3	0.1	
v_c main application		m/min	150 – 500	150 – 400	120 – 350	90 – 290	70 – 260	60 – 70	

Indexable inserts VB. T

Grade			PV720	CA510	CA515	CA525	CA6525	
25E 26 1174	KYOCERA	VBMT 110304	XXX	XXX	XXX	XXX	XXX	10
25E 26 1176		VBMT 110308	XXX	XXX	XXX	XXX	XXX	10
25E 26 1182		VBMT 160404	XXX	XXX	XXX	XXX	XXX	10
25E 26 1184		VBMT 160408	XXX	XXX	XXX	XXX	XXX	10
●			P	P	P	P	M	
⚙			●	●	●	■	■	
Chip breaker			HQ					
a_p		mm	0.5 – 2					
f		mm/rev.	0.05 – 0.25					
v_c main application		m/min	60 – 270	140 – 450	110 – 390	80 – 330	50 – 140	

Grade			HBT020	HBT130	
22D 26 1186	HOLEX	VBMT 110304	XXX	XXX	10
22D 26 1188		VBMT 160404	XXX	XXX	10
●			P	M	
⚙			■	■	
Chip breaker			PF	M	
a_p		mm	0.4 – 1.5	0.1 – 1	
f		mm/rev.	0.1 – 0.3	0.05 – 0.2	
v_c main application		m/min	70 – 250	40 – 220	

VBMT Medium machining

Grade			HB7010-1	HB7020	HB7035-1	HB7120-1	HB7140-1	HU7310	HB7310	HB725	
21G 26 1220	Garant	VBGT 110301	–	–	–	–	–	XXX	–	–	10
21G 26 1222		VBGT 110302	–	–	–	–	–	XXX	XXX	–	10
21G 26 1224		VB.T 110304	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	10
21G 26 1232		VB.T 160404	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	10
21G 26 1234		VB.T 160408	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	10
●			P	P	P	M	M	N	N	UNI	
⚙			●	■	●	●	■	●	●	■	
Chip breaker			SM	SM	SM	VM	VM	AM	AM	UM	
Tolerance			M	M	M	M	M	G	G	M	
a_p		mm	0.5 – 2.5	0.5 – 2.5	0.5 – 2.5	0.5 – 2.5	0.5 – 2.5	0.1 – 4	0.1 – 4	0.2 – 4	
f		mm/rev.	0.1 – 0.3	0.1 – 0.3	0.1 – 0.3	0.1 – 0.3	0.1 – 0.3	0.05 – 0.5	0.05 – 0.5	0.05 – 0.5	
v_c main application		m/min	120 – 440	120 – 350	100 – 320	80 – 260	60 – 230	350 – 600	350 – 600	50 – 250	

Grade			HBT020	HBT130	
22D 26 1252	HOLEX	VBMT 110304	XXX	XXX	10
22D 26 1257		VBMT 160404	XXX	XXX	10
22D 26 1259		VBMT 160408	XXX	XXX	10
●			P	M	
⚙			■	■	
Chip breaker			PM	MM	
a_p		mm	0.5 – 2.5	0.3 – 2.5	
f		mm/rev.	0.12 – 0.3	0.05 – 0.35	
v_c main application		m/min	70 – 250	40 – 220	

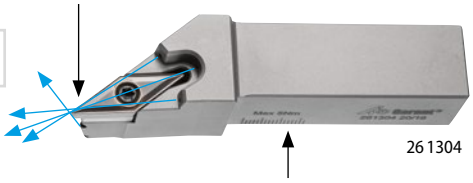
DIN ISO 5610

SVJC 93° eco screw-on toolholder for indexable inserts VC..

GARANT eco system screw-on toolholder with internal coolant feed to the cutting edge.
Cooling by means of precision nozzles effectively and efficiently reduces the thermal loading, since the coolant stream is optimally directed between the chip and cutting edge.
This results in higher productivity, longer tool life and higher process reliability.

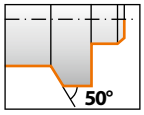
Note: Coolant transfer only in conjunction with GARANT eco-system toolholders No. 317900 – 319886.

Optimum washing of the cutting edge with coolant.



26 1304

Positioning within the scale ensures precise coolant transfer.

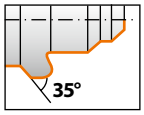


Shank size / insert size	21U 26 1304	21U 26 1305	ISO code toolholder	suitable indexable insert				Pack of insert screws	Shim	Shim screw
	eco screw-on toolholder									
mm	right-hand	left-hand			mm	mm	mm			
16/11	XXX	XXX	SVJCR/L 1616X11	VC.. 1103..	20	34	81	269023 1	–	–
20/11	XXX	XXX	SVJCR/L 2020X11	VC.. 1103..	25	40	99	269023 1	–	–
20/16	XXX	XXX	SVJCR/L 2020X16	VC.. 1604..	25	40	99	269028 28	259033 5	269013 1
25/16	XXX	XXX	SVJCR/L 2525X16	VC.. 1604..	32	40	111.5	269028 28	259033 5	269013 1

DIN ISO 5610

SVHC 107.5° screw-on toolholder for indexable inserts VC..

26 1308

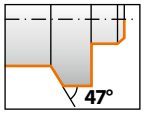


Shank / insert size	21T 26 1308	21T 26 1309	ISO code toolholder	suitable indexable insert				Pack of insert screws	Shim	Shim screw
	Screw-on toolholder									
mm	right-hand	left-hand			mm	mm	mm			
12/11	XXX	XXX	SVHCR/L 1212F11	VC.. 1103..	16	13	80	269028 22	–	–
16/11	XXX	XXX	SVHCR/L 1616H11	VC.. 1103..	20	13	100	269028 22	–	–
20/11	XXX	XXX	SVHCR/L 2020K11	VC.. 1103..	25	17	125	269028 22	–	–
20/16	XXX	XXX	SVHCR/L 2020K16	VC.. 1604..	25	15	125	269028 2	269005 8	269013 2
25/16	XXX	XXX	SVHCR/L 2525M16	VC.. 1604..	32	23.5	150	269028 2	269005 8	269013 2

DIN ISO 5610

SVLC 95° screw-on toolholder for indexable inserts VC..

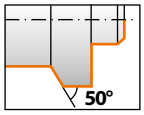
26 1306



Shank size / insert size	21T 26 1306	21T 26 1307	ISO code toolholder	suitable indexable insert				Pack of insert screws
	Screw-on toolholder							
mm	right-hand	left-hand			mm	mm	mm	
8/07	XXX	XXX	SVLCR/L 0808D07	VC.. 0702..	10	15	60	269028 27
10/07	XXX	XXX	SVLCR/L 1010E07	VC.. 0702..	12	15	70	269028 27
12/07	XXX	XXX	SVLCR/L 1212F07	VC.. 0702..	16	18	80	269028 27

DIN ISO 5610

Garant SVJC 93° screw-on toolholder for indexable inserts VC..

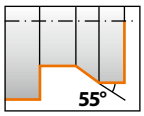


26 1312

Shank / insert size	21T 26 1312	21T 26 1313	ISO code toolholder	suitable indexable insert				Pack of insert screws	Shim	Shim screw
	Screw-on toolholder									
mm	right-hand	left-hand			mm	mm	mm			
12/11	XXX	XXX	SVJCR/L 1212F11	VC.. 1103..	16	21.5	80	269028 22	–	–
16/11	XXX	XXX	SVJCR/L 1616H11	VC.. 1103..	20	21.5	100	269028 22	–	–
20/11	XXX	XXX	SVJCR/L 2020K11	VC.. 1103..	25	24	125	269028 22	–	–
25/11	XXX	XXX	SVJCR/L 2525M11	VC.. 1103..	32	26	150	269028 22	–	–
20/16	XXX	XXX	SVJCR/L 2020K16	VC.. 1604..	25	29.5	125	269028 2	269005 8	269013 2
25/16	XXX	XXX	SVJCR/L 2525M16	VC.. 1604..	32	32.5	150	269028 2	269005 8	269013 2

DIN ISO 5610

Garant SVAC 90° screw-on toolholder for indexable inserts VC..

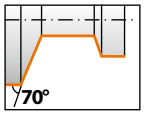


26 1314

Shank / insert size	21T 26 1314	21T 26 1315	ISO code toolholder	suitable indexable insert				Pack of insert screws
	Screw-on toolholder							
mm	right-hand	left-hand			mm	mm	mm	
8/11	XXX	XXX	SVACR/L 0808M11	VC.. 1103..	8	26	150	269021 1
10/11	XXX	XXX	SVACR/L 1010M11	VC.. 1103..	10	26	150	269021 1
12/11	XXX	XXX	SVACR/L 1212M11	VC.. 1103..	12	26	150	269021 1
16/11	XXX	XXX	SVACR/L 1616M11	VC.. 1103..	16	26	150	269021 1
12/16	XXX	XXX	SVACR/L 1212M16	VC.. 1604..	12	40	150	269021 2
16/16	XXX	XXX	SVACR/L 1616M16	VC.. 1604..	16	40	150	269021 2

DIN ISO 5610

Garant SVVCN 72.5° screw-on toolholder for indexable inserts VC..

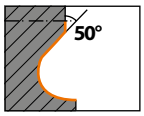


26 1317

Shank / insert size	21T 26 1317	ISO code toolholder	suitable indexable insert				Pack of insert screws	Shim	Shim screw
	Screw-on toolholder								
mm	neutral			mm	mm	mm			
8/07	XXX	SVVCN 0808K07	VC.. 0702..	4	15	125	269028 27	–	–
10/07	XXX	SVVCN 1010M07	VC.. 0702..	5	15	150	269028 27	–	–
12/07	XXX	SVVCN 1212M07	VC.. 0702..	6	18	150	269028 27	–	–
12/11	XXX	SVVCN 1212F11	VC.. 1103..	6	18	80	269028 22	–	–
16/11	XXX	SVVCN 1616H11	VC.. 1103..	8	25	100	269028 22	–	–
20/11	XXX	SVVCN 2020K11	VC.. 1103..	10	31	125	269028 22	–	–
25/11	XXX	SVVCN 2525M11	VC.. 1103..	12.5	39	150	269028 22	–	–
20/16	XXX	SVVCN 2020K16	VC.. 1604..	10	31	125	269028 2	269005 8	269013 2
25/16	XXX	SVVCN 2525M16	VC.. 1604..	12.5	38	150	269028 2	269005 8	269013 2

8×D | Carbide | DIN 8024

E..SVJC 142° boring bars for indexable inserts VC..

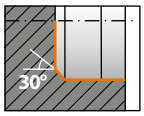


26 1326

Shank ∅ / insert size	21T 26 1326	21T 26 1327	ISO code toolholder	suitable indexable insert	∅ D_{min}						Pack of insert screws
	Boring bar carbide										
mm	right-hand	right-hand			mm	mm	mm	mm	mm	mm	
8/05	XXX	XXX	E08F SVJCR/L05	VC.. 0501..	8	1.5	7.5	6	15	80	269028 26
10/07	XXX	XXX	E10K SVJCR/L07	VC.. 0702..	13	1.5	9	6.3	18	125	269028 27
12/07	XXX	XXX	E12M SVJCR/L07	VC.. 0702..	13	2	11	7.8	18	150	269028 27
16/11	XXX	XXX	E16R SVJCR/L11	VC.. 1103..	22	2	15	9.5	30	200	269028 27

8×D | Carbide | DIN 8024

E..SVXC 113° boring bars for indexable inserts VC..

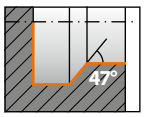


26 1368

Shank ∅ / insert size	21T 26 1368	21T 26 1369	ISO code toolholder	suitable indexable insert	∅ D_{min}						Pack of insert screws
	Boring bar carbide										
mm	right-hand	left-hand			mm	mm	mm	mm	mm	mm	
8/05	XXX	XXX	E08F SVXCR/L05	VC.. 0501..	9.2	5	7.5	6	26	80	269435 2
10/07	XXX	XXX	E10H SVXCR/L07	VC.. 0702..	12.5	7	9	6.8	32	100	269435 3
12/07	XXX	XXX	E12K SVXCR/L07	VC.. 0702..	15.5	9	11	–	–	125	269435 3
16/07	XXX	XXX	E16M SVXCR/L07	VC.. 0702..	19.5	11	15	–	–	150	269435 3

8×D | Carbide | DIN 8024

E..SVLC 95° boring bars for indexable inserts VC..

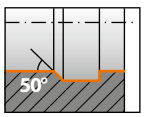


26 1332

Shank ∅ / insert size	21T 26 1332	21T 26 1333	ISO code toolholder	suitable indexable insert	∅ D_{min}						Pack of insert screws
	Boring bar carbide										
mm	right-hand	left-hand			mm	mm	mm	mm	mm	mm	
8/05	XXX	XXX	E08F SVLCR/L05	VC.. 0501..	9.2	5	7.5	6	26	80	269435 2
10/07	XXX	XXX	E10H SVLCR/L07	VC.. 0702..	12.5	7	9	7.5	32	100	269435 3
12/07	XXX	XXX	E12K SVLCR/L07	VC.. 0702..	15.5	9	11	9	40	125	269435 3
16/07	XXX	XXX	E16M SVLCR/L07	VC.. 0702..	19.5	11	15	14.5	55	150	269435 3

8×D | Carbide | DIN 8024

E..SV95C 95° boring bars for indexable inserts VC..

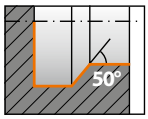


26 1342

Shank ∅ / insert size	21T 26 1342	21T 26 1343	ISO code toolholder	suitable indexable insert	∅ D_{min}						Pack of insert screws
	Boring bar carbide										
mm	right-hand	left-hand			mm	mm	mm	mm	mm	mm	
8/05	XXX	XXX	E08F SV95CR/L05	VC.. 0501..	9.2	5	7.5	6	26	80	269435 2
10/07	XXX	XXX	E10H SV95CR/L07	VC.. 0702..	12.5	7	9	6.8	32	100	269435 3
12/07	XXX	XXX	E12K SV95CR/L07	VC.. 0702..	15.5	9	11	9	40	125	269435 3
16/07	XXX	XXX	E16M SV95CR/L07	VC.. 0702..	19.5	11	15	12.9	55	150	269435 3

8×D | Carbide | DIN 8024

E..SVUC 93° boring bars for indexable inserts VC..

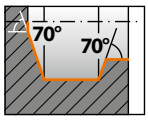


26 1328

Shank Ø / insert size	21T 26 1328	21T 26 1329	ISO code toolholder	suitable indexable insert	Ø D_{min}				Pack of insert screws
	Boring bar carbide								
mm	right-hand	right-hand			mm	mm	mm	mm	
16/11	XXX	XXX	E16R SVUCR/L11	VC.. 1103..	21	11	15	200	269028 7
20/11	XXX	XXX	E20S SVUCR/L11	VC.. 1103..	25	13	18	250	269028 7
25/11	XXX	XXX	E25S SVUCR/L11	VC.. 1103..	31.5	17	23	250	269028 7

8×D | Carbide | DIN 8024

E..SVVC 72.5° boring bars for indexable inserts VC..

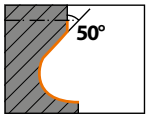


26 1336

Shank Ø / insert size	21T 26 1336	21T 26 1337	ISO code toolholder	suitable indexable insert	Ø D_{min}						Pack of insert screws
	Boring bar carbide										
mm	right-hand	left-hand			mm	mm	mm	mm	mm	mm	
8/05	XXX	XXX	E08F SVVCR/L05	VC.. 0501..	10.2	5	7.5	6	26	80	269435 2
10/07	XXX	XXX	E10H SVVCR/L07	VC.. 0702..	12.5	7	9	6.8	32	100	269435 3
12/07	XXX	XXX	E12K SVVCR/L07	VC.. 0702..	15.5	9	11	9	40	125	269435 3
16/07	XXX	XXX	E16M SVVCR/L07	VC.. 0702..	19.5	11	15	12.9	55	150	269435 3

5×D | HSS | DIN 8024

AH..SVJC 142° boring bars for indexable inserts VC..

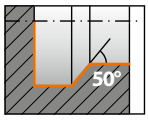


26 1330

Shank Ø / insert size	21T 26 1330	21T 26 1331	ISO code toolholder	suitable indexable insert	Ø D_{min}						Pack of insert screws
	Boring bar HSS										
mm	right-hand	left-hand			mm	mm	mm	mm	mm	mm	
16/11	XXX	XXX	AH16M SVJCR/L11	VC.. 1103..	22	2	15	9.5	30	150	269028 7
20/11	XXX	XXX	AH20Q SVJCR/L11	VC.. 1103..	24	2	19	11	38	180	269028 7
25/16	XXX	XXX	AH25R SVJCR/L16	VC.. 1604..	28	4.6	24	16.5	44	200	269028 8

5×D | HSS | DIN 8024

AH..SVUC 93° boring bars for indexable inserts VC..

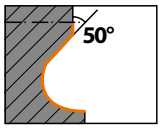


26 1334

Shank Ø / insert size	21T 26 1334	21T 26 1335	ISO code toolholder	suitable indexable insert	Ø D_{min}				Pack of insert screws
	Boring bar HSS								
mm	right-hand	left-hand			mm	mm	mm	mm	
16/11	XXX	XXX	AH16Q SVUCR/L11	VC.. 1103..	21	11	15	180	269028 7
20/11	XXX	XXX	AH20R SVUCR/L11	VC.. 1103..	25	13	18	200	269028 7
25/16	XXX	XXX	AH25R SVUCR/L16	VC.. 1604..	31.5	17	23	200	269028 8

3×D DIN 8024

A..SVJC 142° boring bars for indexable inserts VC..

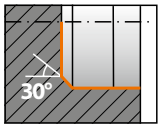


26 1338

Shank Ø / insert size	21T 26 1338	21T 26 1339	ISO code toolholder	suitable indexable insert							Pack of insert screws
	Boring bar steel										
mm	right-hand	left-hand			Ø D_{min} mm	mm	mm	mm	mm	mm	
8/05	XXX	XXX	A08F SVJCR/L05	VC.. 0501..	8	1.5	7.5	6	15	80	269028 26
10/07	XXX	XXX	A10K SVJCR/L07	VC.. 0702..	13	1.5	9	6.3	18	125	269028 27
12/07	XXX	XXX	A12L SVJCR/L07	VC.. 0702..	13	2	11	7.8	18	140	269028 27
16/11	XXX	XXX	A16M SVJCR/L11	VC.. 1103..	22	2	15	9.5	30	150	269028 7
20/11	XXX	XXX	A20Q SVJCR/L11	VC.. 1103..	24	2	19	11	38	180	269028 7
25/16	XXX	XXX	A25R SVJCR/L16	VC.. 1604..	28	4.6	24	16.5	44	200	269028 8

3×D DIN 8024

A..SVXC 113° boring bars for indexable inserts VC..

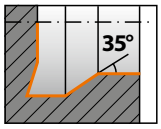


26 1356

Shank Ø / insert size	21T 26 1356	21T 26 1357	ISO code toolholder	suitable indexable insert							Pack of insert screws
	Boring bar steel										
mm	right-hand	left-hand			Ø D_{min} mm	mm	mm	mm	mm	mm	
8/05	XXX	XXX	A08F SVXCR/L05	VC.. 0501..	9.2	5	7.5	6	15	80	269435 2
10/07	XXX	XXX	A10H SVXCR/L07	VC.. 0702..	12.5	7	9	6.8	22	100	269435 3
12/07	XXX	XXX	A12K SVXCR/L07	VC.. 0702..	15.5	9	11	–	–	125	269435 3
16/07	XXX	XXX	A16M SVXCR/L07	VC.. 0702..	19.5	11	15	–	–	150	269435 3

3×D DIN 8024

A..SVQC 107.5° boring bars for indexable inserts VC..

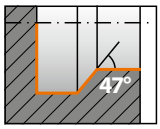


26 1344

Shank Ø / insert size	21T 26 1344	21T 26 1345	ISO code tool-holder	suitable indexable insert					Pack of insert screws	Shim	Shim screw
	Boring bar steel										
mm	right-hand	left-hand			Ø D_{min} mm	mm	mm	mm			
16/11	XXX	XXX	A16Q SVQCR/L11	VC.. 1103..	21	11	15.5	180	269028 7	–	–
20/11	XXX	XXX	A20R SVQCR/L11	VC.. 1103..	24	13	19	200	269028 7	–	–
25/16	XXX	XXX	A25R SVQCR/L16	VC.. 1604..	31.5	17	23	200	269028 8	–	–
32/16	XXX	XXX	A32S SVQCR/L16	VC.. 1604..	40	22	31	250	269028 2	269005 8	269013 2
40/16	XXX	XXX	A40T SVQCR/L16	VC.. 1604..	49	27	39	300	269028 2	269005 8	269013 2

3×D DIN 8024

A..SVLC 95° boring bars for indexable inserts VC..

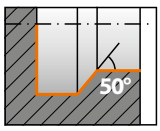


26 1346

Shank ∅ / insert size	21T 26 1346	21T 26 1347	ISO code toolholder	suitable indexable insert	∅ D_{min}						Pack of insert screws
	Boring bar, steel										
mm	right-hand	left-hand			mm	mm	mm	mm	mm	mm	
8/05	XXX	XXX	A08F SVLCR/L05	VC.. 0501..	9.2	5	7.5	6	26	80	269028 26
10/07	XXX	XXX	A10H SVLCR/L07	VC.. 0702..	12.5	7	9	7.5	32	100	269028 27
12/07	XXX	XXX	A12K SVLCR/L07	VC.. 0702..	15.5	9	11	9	40	125	269028 27
16/07	XXX	XXX	A16M SVLCR/L07	VC.. 0702..	19.5	11	15	14.5	55	150	269028 27

3×D DIN 8024

A..SVUC 93° boring bars for indexable inserts VC..

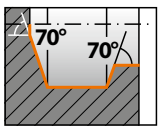


26 1348

Shank ∅ / insert size	21T 26 1348	21T 26 1349	ISO code toolholder	suitable indexable insert	∅ D_{min}				Pack of insert screws	Shim	Shim screw
	Boring bar steel										
mm	right-hand	left-hand			mm	mm	mm	mm			
16/11	XXX	XXX	A16Q SVUCR/L11	VC.. 1103..	21	11	15.5	180	269028 7	–	–
20/11	XXX	XXX	A20R SVUCR/L11	VC.. 1103..	25	13	18	200	269028 7	–	–
25/16	XXX	XXX	A25R SVUCR/L16	VC.. 1604..	32	17	24	200	269028 8	–	–
32/16	XXX	XXX	A32S SVUCR/L16	VC.. 1604..	40	22	31	250	269028 2	269005 8	269013 2
40/16	XXX	XXX	A40T SVUCR/L16	VC.. 1604..	49	27	39	300	269028 2	269005 8	269013 2

3×D DIN 8024

A..SVVC 72.5° boring bars for indexable inserts VC..

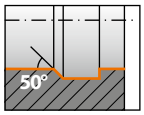


26 1352

Shank ∅ / insert size	21T 26 1352	21T 26 1353	ISO code toolholder	suitable indexable insert	∅ D_{min}						Pack of insert screws
	Boring bar steel										
mm	right-hand	left-hand			mm	mm	mm	mm	mm	mm	
8/05	XXX	XXX	A08F SVVCR/L05	VC.. 0501..	9.7	5.5	7.5	6	15	80	269028 26
10/07	XXX	XXX	A10H SVVCR/L07	VC.. 0702..	13.5	8	9	6.8	28	100	269028 27
12/07	XXX	XXX	A12K SVVCR/L07	VC.. 0702..	15.5	9	11	9	28	125	269028 27
16/07	XXX	XXX	A16M SVVCR/L07	VC.. 0702..	19.5	11	15	12.9	36	150	269028 27
16/11	XXX	XXX	A16M SVVCR/L11	VC.. 1103..	23	14	15.5	11.9	40	150	269028 22
20/11	XXX	XXX	A20Q SVVCR/L11	VC.. 1103..	25	14	19	13.9	50	180	269028 22
25/16	XXX	XXX	A25R SVVCR/L16	VC.. 1604..	34	20	23	19.5	62.5	200	269028 8

3×D | DIN 8024

A..SVXC 95° boring bars for indexable inserts VC..



26 1354

Shank ∅ / insert size	21T 26 1354	21T 26 1355	ISO code toolholder	suitable indexable insert	∅ D_{min}						Pack of insert screws
	Boring bar, steel										
mm	right-hand	left-hand			mm	mm	mm	mm	mm	mm	
8/05	XXX	XXX	A08F SV95CR/L05	VC.. 0501..	9.2	5	7.5	6	15	80	269028 26
10/07	XXX	XXX	A10H SV95CR/L07	VC.. 0702..	12.5	7	9	6.8	22	100	269028 27
12/07	XXX	XXX	A12K SV95CR/L07	VC.. 0702..	15.5	9	11	9	28	125	269028 27
16/07	XXX	XXX	A16M SV95CR/L07	VC.. 0702..	19.5	11	15	12.9	36	150	269028 27

Indexable inserts VC..

VC.. Finishing

Type		HB7010-1	HB7020	HB7025-1	HB7035-1	HB7120-1	HB7125-1	HB7140-1	HU7315-1	HB7415	
21I 26 1358	VCGT 050102	–	–	XXX	–	–	XXX	–	XXX	–	10
21I 26 1360	VCMT 070202	–	–	XXX	–	–	XXX	–	–	–	10
21I 26 1362	VCMT 070204	–	–	XXX	–	–	XXX	–	XXX	–	10
21G 26 1364	VCMT 110302	XXX	XXX	–	XXX	XXX	–	XXX	–	XXX	10
21G 26 1366	VCMT 110304	XXX	XXX	–	XXX	XXX	–	XXX	–	XXX	10
21G 26 1370	VCMT 160402	XXX	XXX	–	XXX	XXX	–	XXX	–	XXX	10
21G 26 1372	VCMT 160404	XXX	XXX	–	XXX	XXX	–	XXX	–	XXX	10
21G 26 1374	VCMT 160408	XXX	XXX	–	XXX	XXX	–	XXX	–	XXX	10
●		P	P	P	P	M	M	M	N	S	
⚙		●	■	■	◆	●	■	■	●	●	
Chip breaker		SS	SS	SF	SS	VS	VF	VS	AF	TIS	
Tolerance		M	M	M	M	M	M	M	G	M	
a_p	mm	0.2 – 1.5	0.2 – 1.5	0.05 – 0.4	0.2 – 1.5	0.2 – 1.5	0.05 – 0.4	0.2 – 1.5	0.05 – 1.5	0.05 – 1	
f	mm/rev.	0.05 – 0.2	0.05 – 0.2	0.03 – 0.2	0.05 – 0.2	0.1 – 0.3	0.03 – 0.2	0.1 – 0.3	0.03 – 0.25	0.1	
v_c main application	m/min	150 – 500	150 – 400	80 – 190	120 – 350	90 – 290	70 – 180	70 – 260	50 – 300	60 – 70	

Grade		SP4019	
28D 26 1382	VCGT 110301	XXX	10
28D 26 1383	VCGT 110302	XXX	10
28D 26 1384	VCGT 110304	XXX	10
●		UNI	
⚙		●	
Chip breaker		62	
a_p	mm	0.15 – 3	
f	mm/rev.	0.05 – 0.3	
v_c main application	m/min	30 – 440	

26 1381

Grade		HBT020	HBT130	
22D 26 1386	VCMT 110304	XXX	XXX	10
22D 26 1388	VCMT 160404	XXX	XXX	10
●		P	M	
⚙		■	■	
Chip breaker		PF	M	
a_p	mm	0.4 – 1.5	0.1 – 1	
f	mm/rev.	0.1 – 0.3	0.05 – 0.2	
v_c main application	m/min	70 – 250	40 – 220	

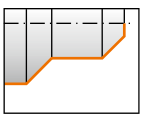
VC.T Medium machining

Grade			CB7010	HB7010-1	HB7020	HB7035-1	HB7120-1	HB7140-1	HU7310	HB7310	HB725	HB730-1	
21G 26 1452	Garant	VCGT 110301	–	–	–	–	–	–	XXX	–	–	–	10
21G 26 1453	Garant	VCGT 110302	–	–	–	–	–	–	XXX	XXX	–	–	10
21G 26 1454	Garant	VC.T 110304	–	XXX	XXX	XXX	XXX	XXX	XXX	XXX	–	–	10
21G 26 1457	Garant	VCGT 160402	–	–	–	–	–	–	XXX	XXX	–	–	10
21G 26 1458	Garant	VC.T 160404	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	10
21G 26 1459	Garant	VC.T 160408	–	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	–	10
●			P	P	P	P	M	M	N	N	UNI	UNI	
○			M	–	–	–	–	–	–	–	–	–	
⚙			●	●	■	●	●	■	●	●	■	■	
Chip breaker			SM	SM	SM	SM	VM	VM	AM	AM	UM	XUM	
Tolerance			M	M	M	M	M	M	G	G	M	M	
a_p		mm	0.2 – 2	0.5 – 2.5	0.5 – 2.5	0.5 – 2.5	0.5 – 2.5	0.5 – 2.5	0.1 – 4	0.1 – 4	0.2 – 4	0.4 – 4	
f		mm/rev.	0.1 – 0.3	0.1 – 0.3	0.1 – 0.3	0.1 – 0.3	0.1 – 0.3	0.1 – 0.3	0.05 – 0.5	0.05 – 0.5	0.05 – 0.5	0.15 – 0.25	
v_c main application		m/min	90 – 240	120 – 440	120 – 350	100 – 320	80 – 260	60 – 230	350 – 600	350 – 600	50 – 250	25 – 175	
v_c secondary application		m/min	70 – 180	–	–	–	–	–	–	–	–	–	

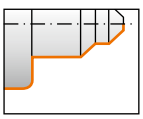
Grade			HBT020	HBT130	
22D 26 1472	HOLEX	VCMT 110304	XXX	XXX	10
22D 26 1474	HOLEX	VCMT 160404	XXX	XXX	10
22D 26 1476	HOLEX	VCMT 160408	XXX	XXX	10
●			P	M	
⚙			■	■	
Chip breaker			PM	MM	
a_p		mm	0.5 – 2.5	0.3 – 2.5	
f		mm/rev.	0.12 – 0.3	0.05 – 0.35	
v_c main application		m/min	70 – 250	40 – 220	

DIN ISO 5610

HOLEX Screw-on toolholder sets for indexable inserts CC..



SCSCR/L



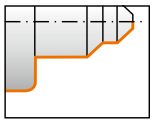
SCLCR/L

Shank / insert size	29W 26 5110	29W 26 5111	ISO code toolholder		suitable indexable insert				Spare part
	Screw-on toolholder set		26 5110	26 5111					
mm	right-hand	right-hand				mm	mm	mm	
16	XXX	XXX	SCLCR 1616H09; SCSCR 1616H09	SCLCL 1616H09; SCSCL 1616H09	CC.. 09T3..	20	17	100	2699814
20	XXX	XXX	SCLCR 2020K09; SCSCR 2020K09	SCLCL 2020K09; SCSCL 2020K09	CC.. 09T3..	25	17	125	2699814
25	XXX	XXX	SCLCR 2525M12; SCSCR 2525M12	SCLCL 2525M12; SCSCL 2525M12	CC.. 1204..	32	20	150	2699815

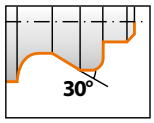
26 5110

DIN ISO 5610

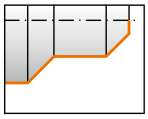
HOLEX Screw-on toolholder sets for indexable inserts CC.. /DC.. /SC..



SCLCR/L



SDJCR/L



SSSCR/L

Shank / insert size	29W 26 5130 Screw-on toolholder set right-hand	29W 26 5131 Screw-on toolholder set right-hand	ISO code toolholder 26 5130	ISO code toolholder 26 5131	suitable indexable insert	mm	mm	mm	Spare part
mm									
12	XXX	XXX	SCLCR 1212F09; SDJCR 1212F07; SSSCR 1212F09	SCLCL 1212F09; SDJCL 1212F07; SSSCL 1212F09	CC.. 09T3..; DC.. 0702..; SC.. 09T3	16	13; 12; 18	80	269981 1
16	XXX	XXX	SCLCR 1616H09; SDJCR 1616H11; SSSCR 1616H12	SCLCL 1616H09; SDJCL 1616H11; SSSCL 1616H12	CC.. 09T3..; DC.. 11T3..; SC.. 1204	20	17; 20; 27	100	269981 2
20	XXX	XXX	SCLCR 2020K09; SDJCR 2020K11; SSSCR 2020K12	SCLCL 2020K09; SDJCL 2020K11; SSSCL 2020K12	CC.. 09T3..; DC.. 11T3..; SC.. 1204	25	17; 20.5; 27	125	269981 2
25	XXX	XXX	SCLCR 2525M12; SDJCR 2525M11; SSSCR 2525M12	SCLCL 2525M12; SDJCL 2525M11; SSSCL 2525M12	CC.. 1204..; DC.. 11T3..; SC.. 1204	32	20; 21.5; 25	150	269981 3

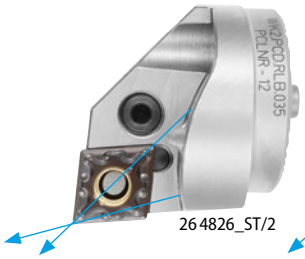
26 5130

SWISS+TOOLS

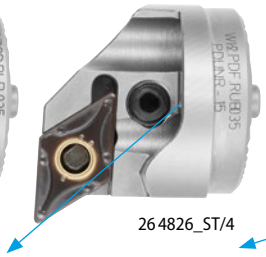
Interchangeable cutting heads for HSKT and PSC boring bar shanks

Suitable for: Boring bar shanks
No. 320102; 320103; 320407; 320408.

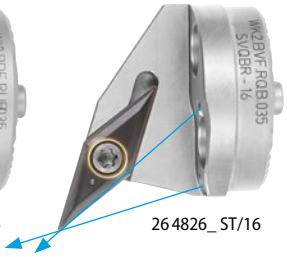
HP ready



26 4826_ST/2



26 4826_ST/4



26 4826_ ST/16

System / insert size			ST/1	ST/2	ST/3	ST/4	ST/5	ST/6	ST/7	ST/8	ST/9
29D 26 4826	Cutting head	right-hand	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
29D 26 4827	Cutting head	left-hand	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
Cutting point / joint		mm	25	32	40	32	40	25	32	40	25
ISO code indexable cutting head (26 4826)			PCLNR	PCLNR	PCLNR	PDUNR	PDUNR	SCLCR	SCLCR	SCLCR	SDQCR
ISO code indexable cutting head (26 4827)			PCLNL	PCLNL	PCLNL	PDUNL	PDUNL	SCLCL	SCLCL	SCLCL	SDQCL
suitable indexable insert			CN.. 1204..	CN.. 1204..	CN.. 1204..	DN.. 1506..	DN.. 1506..	CC.. 1204..	CC.. 1204..	CC.. 1204..	DC.. 11T3..
Approach angle		degrees	95	95	95	93	93	95	95	95	107.5
∅ D_{min}		mm	32	40	50	40	50	32	40	50	32
Centre-line offset		mm	17	22	27	22	27	17	22	27	17
Overall length		mm	35	35	40	35	40	35	35	40	35
Lever			320612 P01	320612 P01	320612 P01	320612 P05	320612 P05	–	–	–	–
Lever screw			320611 P01	320611 P01	320611 P01	320611 P05	320611 P05	–	–	–	–
Spring pin			320618 P01	320618 P01	320618 P01	320618 P05	320618 P05	–	–	–	–
Shim			320610 P01	320610 P01	320610 P01	320610 P05	320610 P05	–	–	–	–
Spare parts			–	–	–	–	–	320620 2	320620 2	320620 2	–
Insert screw			–	–	–	–	–	–	–	–	320624 2

System / insert size			ST/10	ST/11	ST/12	ST/13	ST/14	ST/15	ST/16	ST/17
29D 26 4826	Cutting head	right-hand	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
29D 26 4827	Cutting head	left-hand	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
Cutting point / joint		mm	32	40	25	32	40	25	32	40
ISO code indexable cutting head (26 4826)			SDQCR	SDQCR	SDUCR	SDUCR	SDUCR	SVQBR	SVQBR	SVQBR
ISO code indexable cutting head (26 4827)			SDQCL	SDQCL	SDUCL	SDUCL	SDUCL	SVQBL	SVQBL	SVQBL
suitable indexable insert			DC.. 11T3..	DC.. 11T3..	DC.. 11T3..	DC.. 11T3..	DC.. 11T3..	VB.. 1103..	VB.. 1604..	VB.. 1604..
Approach angle		degrees	107.5	107.5	93	93	93	107.5	107.5	107.5
∅ D_{min}		mm	40	50	32	40	50	32	40	50
Centre-line offset		mm	22	27	17	22	27	17	22	27
Overall length		mm	35	40	35	35	40	35	35	40
Insert screw			320624 2	320624 2	320624 2	320624 2	320624 2	320624 2	320626 2	320626 2

GARANT Master Mute

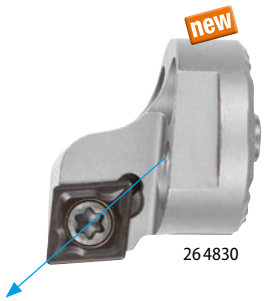
Vibration-damping boring bars – now also with shank diameter 16 mm!

- Specially developed for small components with diameter D_{min} from 20 mm!
- New GL interface – suitable for all GL interchangeable cutting heads.

GL system interchangeable cutting heads

Suitable for: Boring bar shanks No. 264866 / 4870.

Note: Combination of all GL system interchangeable cutting heads with all GL system boring bar shanks.



System / insert size			GL/10	GL/11
29D 26 4830	Cutting head	right-hand	XXX	XXX
29D 26 4831		left-hand	XXX	XXX
Cutting point / joint		mm	16	
ISO code indexable cutting head (26 4830)			SCLCR	SDUCR
ISO code indexable cutting head (26 4831)			SCLCL	SDUCL
suitable indexable insert			CC.. 0602..	DC.. 0702..
Approach angle		degrees	95	93
∅ D_{min}		mm	20	
Centre-line offset		mm	11	
Overall length		mm	15.4	16
Insert screw			269028 38	

QC system interchangeable cutting heads

Suitable for: Boring bar shanks No. 264890 / 4894 / 4900.

Note: All QC system interchangeable cutting heads can be combined with all QC system boring bar shanks (irrespective of shank -∅).

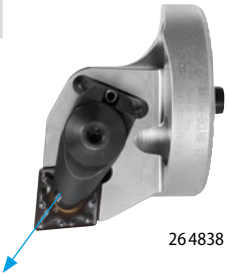
System / insert size			QC/20	QC/22	QC/23	QC/24	QC/25	QC/28	QC/29	QC/30	QC/33
29D 26 4834	Cutting head	right-hand	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
29D 26 4835		left-hand	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
Cutting point / joint		mm	20								
ISO code indexable cutting head (26 4834)			SCLCR	SDQCR	SDQCR	SDUCR	SDUCR	STUCR	STUCR	SVUCR	SIR
ISO code indexable cutting head (26 4835)			SCLCL	SDQCL	SDQCL	SDUCL	SDUCL	STUCL	STUCL	SVUCL	SIL
suitable indexable insert			CC.. 09T3..	DC.. 0702..	DC.. 11T3..	DC.. 0702..	DC.. 11T3..	TC.. 1102..	TC.. 16T3..	VC.. 1103..	16
Approach angle		degrees	95	107.5	107.5	93	93	93	93	93	93
∅ D_{min}		mm	24	24	26	24	26	24	26	26	26
Centre-line offset		mm	13	13	15	13	15	13	15	16	15
Overall length		mm	20	20	22	21	20	20	21	20	22
Insert screw			269023 2	269023 1	269023 2	269023 1	269023 2	269023 2	269023 2	269023 1	269023 2

DM

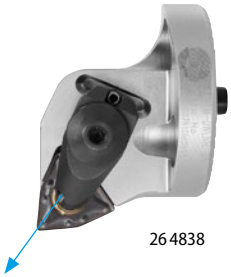
DM system interchangeable cutting heads

Suitable for: Boring bar shanks No. 264910 / 4930 / 4934.

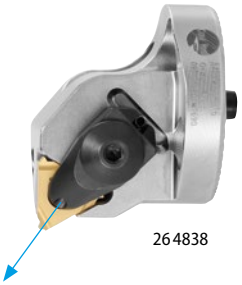
Note: All DM system interchangeable cutting heads can be combined with all DM system boring bar shanks (irrespective of shank -Ø).



26 4838



26 4838



26 4838

System / insert size			DM/40	DM/42	DM/43	DM/44	DM/45
29D 26 4838	Cutting head	right-hand	XXX	XXX	XXX	XXX	XXX
29D 26 4839		left-hand	XXX	XXX	XXX	XXX	XXX
Cutting point / joint		mm			40		
ISO code indexable cutting head (26 4838)			DCLNR	DDUNR	DTUNR	DVUNR	DWLNR
ISO code indexable cutting head (26 4839)			DCLNL	DDUNL	DTUNL	DVUNL	DWLNL
suitable indexable insert			CN.. 1204..	DN.. 1506..	TN.. 1604..	VN.. 1604..	WN.. 0804..
Approach angle		degrees	95	93	93	93	95
Ø D_{min}		mm	48	48	48	50	48
Centre-line offset		mm	27	27	27	29	27
Overall length		mm			35		
Shim			259033 2	259033 3	259033 4	259033 5	259033 6
Shim screw			259027 2	259027 2	259027 1	259027 3	259027 4
Clamp, screw, O-ring (26 4838)			259036 3	259036 4	259036 2	259036 7	259036 5
Clamp, screw, O-ring (26 4839)			259036 17	259036 4	259036 6	259036 18	259036 1

System / insert size			DM/46	DM/48	DM/49	DM/50	DM/51
29D 26 4838	Cutting head	right-hand	XXX	XXX	XXX	XXX	XXX
29D 26 4839		left-hand	XXX	XXX	XXX	XXX	XXX
Cutting point / joint		mm			40		
ISO code indexable cutting head (26 4838)			SCLCR	SDUCR	STUCR	SVUCR	DIR
ISO code indexable cutting head (26 4839)			SCLCL	SDUCL	STUCL	SVUCL	DIL
suitable indexable insert			CC.. 1204..	DC.. 11T3..	TC.. 16T3..	VC.. 1604..	16
Approach angle		degrees	95	93	93	93	93
Ø D_{min}		mm	49	49	49	49	48
Centre-line offset		mm	27	27	27	27	25
Overall length		mm	32	32	32	32	35
Shim			–	–	–	–	279820 1
Clamp, screw, O-ring (26 4838)			–	–	–	–	279835 1
Clamp, screw, O-ring (26 4839)			–	–	–	–	279835 2
Insert screw			269022 4	269023 3	269023 3	269023 1	–

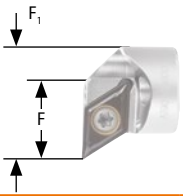
5×D

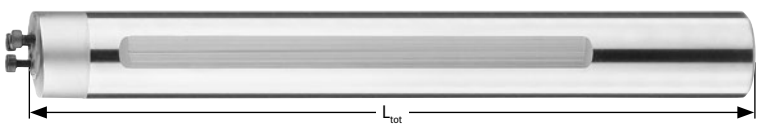
Boring bar shanks QC system/DM system / steel

With cooling water connection 1/8-27 NPT.

Note: D_{min} = 1/2 shank Ø + H + cutting head centre-line offset F.

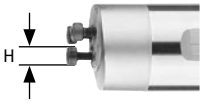
QC DM





26 4900

26 4910



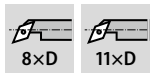
System / shank Ø	29E 26 4900 Boring bar base body Steel QC 5×D	29E 26 4910 Boring bar base body Steel DM 5×D	L_{tot} mm	H mm	Assembly bolt
QC/20	XXX	–	160	–	269025 2
QC/25	XXX	–	205	2.5	269025 2
QC/32	XXX	–	268	6	269025 2
DM/40	–	XXX	328	–	269025 1
DM/50	–	XXX	418	5	269025 1
DM/60	–	XXX	508	10	269025 1

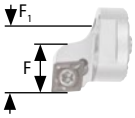
GARANT Master Mute boring bar shanks GL system

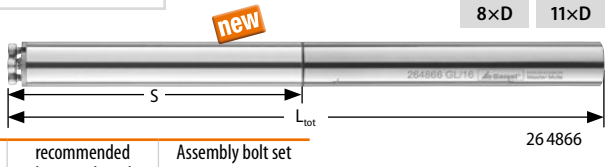
26 4866 – With cooling water connection G1/4 inch.
26 4870 – Shank carbide reinforced.

Supplied with: Reducing adaptor from G1/4 inch to G1/8 inch.

Note: Do not clamp on the area marked **S**!
D_{min} = 1/2 shank Ø + H + cutting head centre-line offset







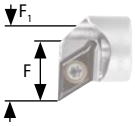
System / shank Ø	29E 26 4866	29E 26 4870	L_{tot}		S		recommended clamping length	Assembly bolt set
	GARANT Master Mute boring bar shank							
	vibration damping		26 4866	26 4870	26 4866	26 4870		
	8×D	11×D	mm	mm	mm	mm	mm	
GL/16	XXX	XXX	170	204	74	85	64	269026 1

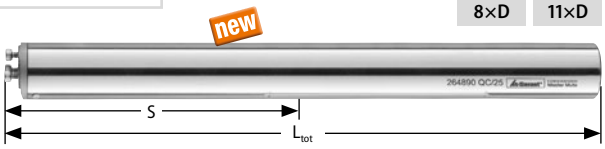
GARANT Master Mute boring bar shanks QC system

Size QC/32 – With cooling water connection G1/2 inch.
26 4894 Size QC/20 – Shank carbide reinforced.
Size QC/20; QC/25 – With cooling water connection G1/4 inch.

Supplied with:
Size QC/32 – Reducing adaptor from G1/2 inch to G1/8 inch.
Size QC/20; QC/25 – Reducing adaptor from G1/4 inch to G1/8 inch.

Note: Do not clamp on the area marked **S**!
D_{min} = 1/2 shank Ø + H + cutting head centre-line offset





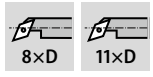
System / shank Ø	29E 26 4890	29E 26 4894	L_{tot}		H	S		recommended clamping length	Assembly bolt set
	GARANT Master Mute boring bar shank								
	vibration damping		26 4890	26 4894		26 4890	26 4894		
	8×D	11×D	mm	mm	mm	mm	mm	mm	
QC/20	XXX	XXX	200	260	–	84	119	80	269026 1
QC/25	XXX	XXX	255	330	2.5	107	125	100	269026 1
QC/32	XXX	XXX	320	416	6	124	151	128	269026 1

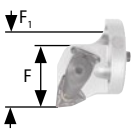
GARANT Master Mute boring bar shanks DM system

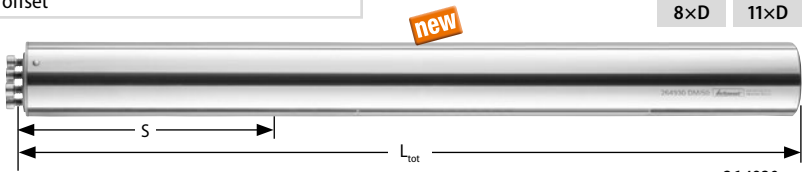
Size DM/60 – With cooling water connection G3/4 inch.
Size DM/40; DM/50 – With cooling water connection G1/2 inch.

Supplied with:
Size DM/60 – Reducing adaptor from G3/4 inch to G1/4 inch.
Size DM/40; DM/50 – Reducing adaptor from G1/2 inch to G1/8 inch.

Note: Do not clamp on the area marked **S**!
D_{min} = 1/2 shank Ø + H + cutting head centre-line offset







System / shank Ø	29E 26 4930	29E 26 4934	L_{tot}		H	S		recommended clamping length	Assembly bolt set
	GARANT Master Mute boring bar shank								
	vibration damping		26 4930	26 4934		26 4930	26 4934		
	8×D	11×D	mm	mm	mm	mm	mm	mm	
DM/40	XXX	XXX	408	528	–	144	196	160	269026 2
DM/50	XXX	XXX	518	660	5	179	239	200	269026 2
DM/60	XXX	XXX	628	808	10	230	309	240	269026 2

Garant Indexable inserts CBN (7°)

Innovative **„all-in-one“ concept,** to reduce the variety of items you hold in stock and give you the flexibility in production that you need.
New type of CBN with a balanced combination of wear-resistance and tensile strength for general-purpose use in hardened steel up to 67 HRC in combination with a special chamfered profile.
For use both in continuous cutting and also in slightly interrupted cutting and heavily interrupted cutting.
SIMPLE. FAST. ALWAYS THE RIGHT CHOICE.

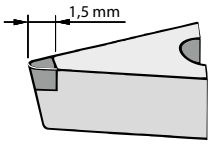
Garant Indexable inserts CBN (7°)

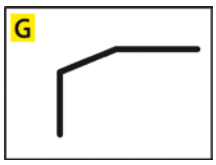
26 5403–5442/5457–5484 – Fitted with 2 cutters.
26 5445–5454 –Fitted with 3 cutters.

	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 67 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	CuZn	Graphite GRP CRP	Uni
ISO code	N	N	N	P	P	P	P	P	H	H	H	M	M	S	K	N	N	
BU7220									●	●	●							

Cutting edge version			G
21H 26 5403	CCGW 060202	BU7220	XXX
21H 26 5406	CCGW 060204	BU7220	XXX
21H 26 5409	CCGW 060208	BU7220	XXX
21H 26 5412	CCGW 09T302	BU7220	XXX
21H 26 5415	CCGW 09T304	BU7220	XXX
21H 26 5418	CCGW 09T308	BU7220	XXX
21H 26 5421	CCGW 120404	BU7220	XXX
21H 26 5424	CCGW 120408	BU7220	XXX
a_p		mm	0.03 – 0.12
f		mm/rev.	0.04 – 0.12
v_c main application		m/min	120 – 160

26 5412





Cutting edge (chamfered). Chamfering generally applicable for steel up to 67 HRC.

Cutting edge version			G
21H 26 5427	DCGW 070202	BU7220	XXX
21H 26 5430	DCGW 070204	BU7220	XXX
21H 26 5433	DCGW 070208	BU7220	XXX
21H 26 5436	DCGW 11T302	BU7220	XXX
21H 26 5439	DCGW 11T304	BU7220	XXX
21H 26 5442	DCGW 11T308	BU7220	XXX
a_p		mm	0.03 – 0.12
f		mm/rev.	0.04 – 0.12
v_c main application		m/min	120 – 160

26 5442

Cutting edge version			G
21H 26 5445	TCGW 110202	BU7220	XXX
21H 26 5448	TCGW 110204	BU7220	XXX
21H 26 5451	TCGW 16T304	BU7220	XXX
21H 26 5454	TCGW 16T308	BU7220	XXX
a_p		mm	0.03 – 0.12
f		mm/rev.	0.04 – 0.12
v_c main application		m/min	120 – 160

26 5454

Cutting edge version			G
21H 26 5457	VBGW 110302	BU7220	XXX
21H 26 5460	VBGW 110304	BU7220	XXX
21H 26 5463	VBGW 160402	BU7220	XXX
21H 26 5466	VBGW 160404	BU7220	XXX
21H 26 5469	VBGW 160408	BU7220	XXX
a_p		mm	0.03 – 0.12
f		mm/rev.	0.04 – 0.12
v_c main application		m/min	120 – 160

26 5466

Cutting edge version			G
21H 26 5472	VCGW 110302	BU7220	XXX
21H 26 5475	VCGW 110304	BU7220	XXX
21H 26 5478	VCGW 160402	BU7220	XXX
21H 26 5481	VCGW 160404	BU7220	XXX
21H 26 5484	VCGW 160408	BU7220	XXX
a_p		mm	0.03 – 0.12
f		mm/rev.	0.04 – 0.12
v_c main application		m/min	120 – 160

26 5475

KYOCERA Indexable inserts CBN (5° / 7°)

MEGACOAT-coated CBN inserts.

Size ME – MultiEdge; 2 cutting edges per insert.

Size MET – MultiEdge Tough; 2 cutting edges per insert, with special honing for optimisation of interrupted cutting.

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 67 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	CuZn	Graphite GRP CRP	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	M	M	S	K	N	N						
KBN05M									●	●	●								●	○			●
KBN25M									●	●	●								○	●	○		●
KBN35M									●	●	○									○	●		●

Type			ME	MET
25H 26 5606	CCMW 060202	KBN05M	XXX	–
25H 26 5608		KBN25M	XXX	–
25H 26 5610		KBN35M	XXX	–
25H 26 5612	CCMW 060204	KBN05M	XXX	–
25H 26 5614		KBN25M	XXX	–
25H 26 5616		KBN35M	XXX	–
25H 26 5620	CCMW 060208	KBN25M	XXX	–
25H 26 5626	CCMW 09T302	KBN05M	XXX	–
25H 26 5628		KBN25M	XXX	–
25H 26 5632	CCMW 09T304	KBN05M	XXX	–
25H 26 5634		KBN25M	XXX	XXX
25H 26 5636		KBN35M	XXX	XXX
25H 26 5638	CCMW 09T308	KBN05M	XXX	–
25H 26 5640		KBN25M	XXX	XXX
25H 26 5642		KBN35M	XXX	XXX
25H 26 5656	DCMW 070202	KBN05M	XXX	–
25H 26 5658		KBN25M	XXX	XXX
25H 26 5662	DCMW 070204	KBN05M	XXX	–
25H 26 5664		KBN25M	XXX	XXX
25H 26 5680	DCMW 11T302	KBN05M	XXX	–
25H 26 5682		KBN25M	XXX	XXX
25H 26 5684		KBN35M	XXX	–
25H 26 5686	DCMW 11T304	KBN05M	XXX	–
25H 26 5688		KBN25M	XXX	XXX
25H 26 5690		KBN35M	–	XXX
25H 26 5692	DCMW 11T308	KBN05M	XXX	–
25H 26 5694		KBN25M	XXX	XXX
25H 26 5696		KBN35M	XXX	XXX
25H 26 5730	VBGW 160402	KBN05M	XXX	–
25H 26 5732		KBN25M	XXX	XXX
25H 26 5734		KBN35M	XXX	XXX
25H 26 5736	VBGW 160404	KBN05M	XXX	–
25H 26 5738		KBN25M	XXX	XXX
25H 26 5740		KBN35M	XXX	XXX
25H 26 5742	VBGW 160408	KBN05M	XXX	–
25H 26 5744		KBN25M	XXX	XXX
25H 26 5746		KBN35M	–	XXX
a_p		mm	0.05 – 0.5	
f		mm/rev.	0.08 – 0.15	0.1 – 0.2
v_c main application		m/min	120 – 200	100 – 180

26 5614_ME

26 5634_ME

26 5664_ME

26 5688_ME

26 5738_ME

HOLEX Indexable inserts CBN (7°)

- Disposable insert.
- Single cutting edge.

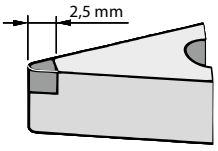
Note: Further indexable insert shapes, sizes and corner radii available on request.

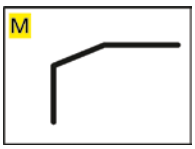
Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 67 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	CuZn	Graphite GRP CRP	Uni
ISO code	N	N	N	P	P	P	P	P	H	H	H	M	M	S	K	N	N	
BUX220									●	●								

CCMW

Cutting edge version			M
221 26 5750	CCMW 060202	BUX220	XXX
221 26 5752	CCMW 060204	BUX220	XXX
221 26 5754	CCMW 09T302	BUX220	XXX
221 26 5756	CCMW 09T304	BUX220	XXX
221 26 5758	CCMW 09T308	BUX220	XXX
a_p		mm	0.1 – 0.5
f		mm/rev.	0.1 – 0.2
v_c main application		m/min	80 – 200

26 5750





Cutting edge (honed). General purpose chamfering (steel above 45 HRC) even for slightly interrupted cutting.

DCMW

Cutting edge version			M
221 26 5760	DCMW 070202	BUX220	XXX
221 26 5762	DCMW 070204	BUX220	XXX
221 26 5764	DCMW 070208	BUX220	XXX
221 26 5766	DCMW 11T302	BUX220	XXX
221 26 5768	DCMW 11T304	BUX220	XXX
221 26 5770	DCMW 11T308	BUX220	XXX
a_p		mm	0.1 – 0.5
f		mm/rev.	0.1 – 0.2
v_c main application		m/min	80 – 200

26 5760

VBMW

Cutting edge version			M
221 26 5772	VBMW 110302	BUX220	XXX
221 26 5774	VBMW 110304	BUX220	XXX
221 26 5776	VBMW 160402	BUX220	XXX
221 26 5778	VBMW 160404	BUX220	XXX
221 26 5780	VBMW 160408	BUX220	XXX
a_p		mm	0.1 – 0.5
f		mm/rev.	0.1 – 0.2
v_c main application		m/min	80 – 200

26 5772

VCMW

Cutting edge version			M
221 26 5782	VCMW 110302	BUX220	XXX
221 26 5784	VCMW 110304	BUX220	XXX
221 26 5786	VCMW 160402	BUX220	XXX
221 26 5788	VCMW 160404	BUX220	XXX
221 26 5790	VCMW 160408	BUX220	XXX
a_p		mm	0.1 – 0.25
f		mm/rev.	0.1 – 0.2
v_c main application		m/min	80 – 200

26 5782

Glossy results in non-ferrous metals

Surfaces with R_a < 0.1 µm – glossy and quickly produced with MCD indexable inserts

Glossy surfaces with R_a < 0.1 µm achieved without subsequent operations such as polishing!
GARANT MCD (mono-crystalline diamond) indexable inserts allow quick and precise very fine machining of non-ferrous metals and synthetic materials in just a single set-up.
Extend your production capabilities or optimise your processes for finish machining of your components.

Advantages

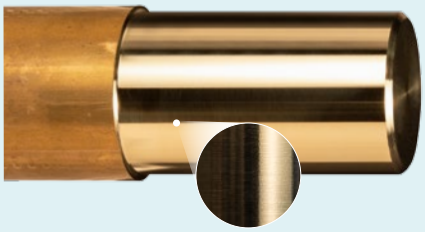
- **No sub-contracting required.**
  Achievement of high-quality and highly decorative surfaces with very little effort.
- **No loss of contour.**
  Geometries and dimensions are maintained exactly.
- **No loss of quality.**
  Consistent process reliability and reproducibility.
- **No special tools necessary.**
  Can be mounted in standard ISO screw-on toolholders.
- **Machining can be performed without restrictive contours.**
  Maximum flexibility with very high precision.
- **Minimum storage costs.**
  Wide range. Large number of available insert geometries, sizes and radii available ex stock.

Finish machining using MCD indexable inserts in many cases results in surface finish results which eliminate the need for subsequent finishing operations such as polishing.
This can greatly reduce the complexity of your production process.

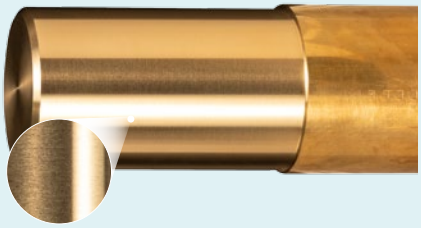
Practical example using article No. 26 6000 NK

Surface with R_a < 0.05 µm!

MCD indexable insert



Standard indexable insert



Comparison between MCD, PCD and standard indexable inserts

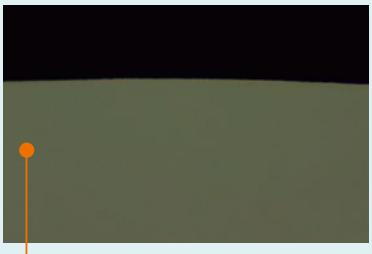
The surface quality of a component is the direct inverse of the cutting edge of the insert that is used.

In contrast to those of standard sintered indexable inserts and PCD indexable inserts, cutting edges of mono-crystalline diamond are not interrupted by the sinter bonding phases. MCD cutting edges are free of discontinuities and are extremely sharp.
These qualities mean they produce excellent surfaces and exact precision component geometries.
The cutting edges of PCD indexable inserts or standard indexable inserts are more rounded and thus have a greater tendency to rub and press.
Abrasive particles in the component material damage the soft sinter bonding phases and lead to discontinuities.
These are then reflected in the surface quality of the component.

Microscope images

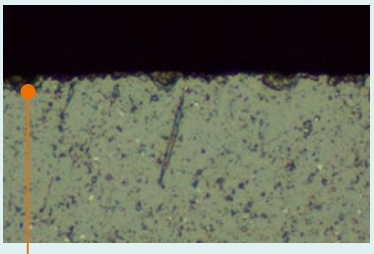
Laser-cut MCD cutting edge
at 100 times magnification

→ **No discontinuities**



PCD cutting edge
at 100 times magnification

→ **Micro-discontinuities**



Indexable inserts MCD

MCD - mono-crystalline diamond, laser-profiled cutting edges.
Size NL – Honing for long-chipping non-ferrous metals.
Size NK – Honing for short-chipping non-ferrous metals.
Size NS – Honing for synthetic materials (PMMA, POM, acrylics etc.).

Application: For very fine machining for the best finishing surfaces.

Recommendation: For the best results use the GARANT eco system. Alternatively all suitable ISO tool holders and boring bars can be used.

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	PMMA acrylic	PE-HD	PA 66	PEEK	AFRP aramid	PVDF GF20	POM GF25	< 500 N	< 750 N	< 900 N	> 850 N	Cu	CuZn	GRP CRP	Graphite					
ISO code	N	N	N	N	N	N	N	N	N	N	P	P	P	S	N	N	N	N					
NK	○	●	○											○	●	●	○	○	○	○	○	●	●
NL	●	○	○											●			○	○	○	○	○	●	●
NS	●	○		●	●	○	○	○	●	●								●	○	○	○	●	●

CCGW

Cutting edge version			NL	NK	NS
21L 26 5900	CCGW 060204 FN	MCD	XXX	XXX	XXX
21L 26 5904	CCGW 060208 FN	MCD	XXX	XXX	XXX
21L 26 5916	CCGW 09T304 FN	MCD	XXX	XXX	XXX
21L 26 5920	CCGW 09T308 FN	MCD	XXX	XXX	XXX
21L 26 5924	CCGW 09T312 FN	MCD	XXX	XXX	XXX
21L 26 5932	CCGW 120404 FN	MCD	XXX	XXX	XXX
21L 26 5936	CCGW 120408 FN	MCD	XXX	XXX	XXX
21L 26 5940	CCGW 120412 FN	MCD	XXX	XXX	XXX
a_p		mm		0.01 – 0.2	
f		mm/rev.	0.005 – 0.1	0.005 – 0.08	0.005 – 0.4
v_c main application		m/min	150 – 1600	80 – 1000	100 – 1400

26 5900

DCGW

Cutting edge version			NL	NK	NS
21L 26 5948	DCGW 070204 FN	MCD	XXX	XXX	XXX
21L 26 5952	DCGW 070208 FN	MCD	XXX	XXX	XXX
21L 26 5964	DCGW 11T304 FN	MCD	XXX	XXX	XXX
21L 26 5968	DCGW 11T308 FN	MCD	XXX	XXX	XXX
21L 26 5972	DCGW 11T312 FN	MCD	XXX	XXX	XXX
a_p		mm		0.01 – 0.2	
f		mm/rev.	0.005 – 0.1	0.005 – 0.08	0.005 – 0.4
v_c main application		m/min	150 – 1600	80 – 1000	100 – 1400

26 5968

VBGW

Cutting edge version			NL	NK	NS
21L 26 6010	VBGW 110304 FN	MCD	XXX	XXX	XXX
21L 26 6012	VBGW 110308 FN	MCD	XXX	XXX	XXX
21L 26 6016	VBGW 160404 FN	MCD	XXX	XXX	XXX
21L 26 6018	VBGW 160408 FN	MCD	XXX	XXX	XXX
a_p		mm		0.01 – 0.2	
f		mm/rev.	0.005 – 0.1	0.005 – 0.08	0.005 – 0.04
v_c main application		m/min	150 – 1600	80 – 1000	100 – 1400

26 6016

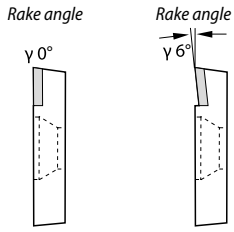
VCGW

Cutting edge version			NL	NK	NS
21L 26 5980	VCGW 110304 FN	MCD	XXX	XXX	XXX
21L 26 5984	VCGW 110308 FN	MCD	XXX	XXX	XXX
21L 26 5996	VCGW 160404 FN	MCD	XXX	XXX	XXX
21L 26 6000	VCGW 160408 FN	MCD	XXX	XXX	XXX
21L 26 6004	VCGW 160412 FN	MCD	XXX	XXX	XXX
a_p		mm		0.01 – 0.2	
f		mm/rev.	0.005 – 0.1	0.005 – 0.08	0.005 – 0.04
v_c main application		m/min	150 – 1600	80 – 1000	100 – 1400

26 5980

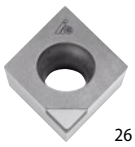
Garant Indexable inserts PCD (7°)

PCD – Polycrystalline diamond, fine grain.
Size N – Neutral, without chip breaker.
Size TWF – Finishing, sharp edges for low cutting pressure.
Size TWM – General machining, stable cutting edge for high metal removal rates.
Size TWN – Roughing, stable cutting edge for large cutting depths.
Application: For aluminium, aluminium alloys, non-ferrous metals, plastics, composite materials, titanium alloys, sintered metals.



Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 67 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	CuZn	Graphite GRP CRP	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	M	M	S	K	N	N						
N	○	●	●													●	●		●	●		●	●
TWF	●	●	●														●		●	●		●	●
TWM/TWN	●	●	●											○		●	●		●	●		●	●

Cutting edge version			N	TWF	TWM	TWN	Rake degrees
21L 26 5800	CCGW 060202 FN	PCD	XXX	–	–	–	0
21L 26 5802	CCGT 060202 FN	PCD	XXX	XXX	XXX	–	6
21L 26 5805	CCGW 060204 FN	PCD	XXX	–	–	–	0
21L 26 5807	CCGT 060204 FN	PCD	XXX	XXX	XXX	–	6
21L 26 5810	CCGW 09T302 FN	PCD	XXX	–	–	–	0
21L 26 5812	CCGT 09T302 FN	PCD	XXX	XXX	XXX	–	6
21L 26 5815	CCGW 09T304 FN	PCD	XXX	–	–	–	0
21L 26 5817	CCGT 09T304 FN	PCD	XXX	XXX	XXX	–	6
21L 26 5823	CCGT 09T308 FR GS right-hand	PCD	–	–	–	XXX	6
21L 26 5824	CCGT 09T308 FL GS left-hand	PCD	–	–	–	XXX	6
21L 26 5826	CCGW 120404 FN	PCD	XXX	–	–	–	0
21L 26 5827	CCGT 120404 FN	PCD	XXX	XXX	XXX	–	6
a_p (26 5800, 26 5802, 26 5805, 26 5810, 26 5812, 26 5815, 26 5823, 26 5824, 26 5826)		mm	0.1 – 2.5	0.1 – 1	0.2 – 2.5	0.5 – 7.5	
a_p (26 5807, 26 5817, 26 5827)		mm	0.1 – 2.5	0.3 – 1	0.2 – 2.5	–	
f		mm/rev.	0.03 – 0.4	0.03 – 0.2	0.05 – 0.3	0.05 – 0.5	
Alu < 10 % Si: v_c		m/min	300 – 2000	400 – 3500	400 – 3500	400 – 3500	
NF metals: v_c		m/min	300 – 1500	–	300 – 2200	300 – 2200	
G(C)RP: v_c		m/min	150 – 600	400 – 900	400 – 900	400 – 900	


26 5815_N

26 5817 _TWM

26 5824 _TWN

Cutting edge version			N	TWF	TWM	Rake degrees
21L 26 5830	DCGW 070202 FN	PCD	XXX	–	–	0
21L 26 5832	DCGT 070202 FN	PCD	XXX	XXX	XXX	6
21L 26 5835	DCGW 070204 FN	PCD	XXX	–	–	0
21L 26 5837	DCGT 070204 FN	PCD	XXX	XXX	XXX	6
21L 26 5845	DCGW 11T302 FN	PCD	XXX	–	–	0
21L 26 5847	DCGT 11T302 FN	PCD	XXX	XXX	XXX	6
21L 26 5850	DCGW 11T304 FN	PCD	XXX	–	–	0
21L 26 5852	DCGT 11T304 FN	PCD	XXX	XXX	XXX	6
a_p (26 5830, 26 5832, 26 5835, 26 5845, 26 5847, 26 5850)		mm	0.1 – 2.5	0.1 – 1	0.2 – 2.5	
a_p (26 5837, 26 5852)		mm	0.1 – 2.5	0.3 – 1	0.2 – 2.5	
f		mm/rev.	0.03 – 0.4	0.03 – 0.2	0.05 – 0.3	
Alu < 10 % Si: v_c		m/min	300 – 2000	400 – 3500	400 – 3500	
NF metals: v_c		m/min	300 – 1500	–	300 – 2200	
G(C)RP: v_c		m/min	150 – 600	400 – 900	400 – 900	

26 5832_N

26 5832_TWF

26 5832_TWM

Cutting edge version			N	TWF	TWM	Rake degrees
21L 26 5872	VCGT 110301 FN	PCD	XXX	XXX	–	6
21L 26 5875	VCGW 110302 FN	PCD	XXX	–	–	0
21L 26 5877	VCGT 110302 FN	PCD	XXX	XXX	XXX	6
21L 26 5880	VCGW 110304 FN	PCD	XXX	–	–	0
21L 26 5882	VCGT 110304 FN	PCD	XXX	XXX	XXX	6
21L 26 5892	VCGT 160402 FN	PCD	XXX	XXX	XXX	6
21L 26 5895	VCGW 160404 FN	PCD	XXX	–	–	0
21L 26 5897	VCGT 160404 FN	PCD	XXX	XXX	XXX	6
a_p (26 5872, 26 5875, 26 5880, 26 5895)		mm	0.1 – 2.5	0.05 – 0.5	–	
a_p (26 5877, 26 5892)		mm	0.1 – 2.5	0.1 – 1	0.2 – 2.5	
a_p (26 5882, 26 5897)		mm	0.1 – 2.5	0.3 – 1	0.2 – 2.5	
f		mm/rev.	0.03 – 0.4	0.03 – 0.2	0.05 – 0.3	
Alu < 10 % Si: v_c		m/min	300 – 2000	400 – 3500	400 – 3500	
NF metals: v_c		m/min	300 – 1500	–	300 – 2200	
G(C)RP: v_c		m/min	150 – 600	400 – 900	400 – 900	

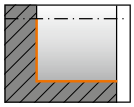
26 5877_N

26 5877_TWF

26 5877_TWM

8×D | Carbide | DIN 8024

E.. SCLD 95° / 97° boring bars for indexable inserts CDCT S4010.

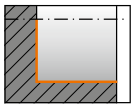


26 8712

Overhang / insert size	21V 26 8712	21V 26 8716	ISO code tool-holder	Cutting point / joint	Setting angle κ	suitable indexa-ble insert	Ø D_{min}				Pack of insert screws
	Boring bar carbide										
mm	right-hand	left-hand		mm	degrees		mm	mm	mm	mm	
60/S4	XXX	XXX	E04G SCLDR/LS4	4	97	CDCT S4010.	4.57	2.5	3.58	90	269028 10
65/S4	XXX	XXX	E05H SCLDR/LS4	5	95	CDCT S4010.	5.94	3	4.6	100	269028 10
75/S4	XXX	XXX	E06J SCLDR/LS4	6	95	CDCT S4010.	6.91	3.5	5.54	110	269028 10
85/S4	XXX	XXX	E08K SCLDR/LS4	8	95	CDCT S4010.	9.05	4.5	7.49	125	269028 10

5×D | HSS | DIN 8024

AH.. SCLD 95° / 97° boring bars for indexable inserts CDCT S4010.

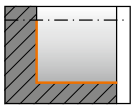


26 8702

Overhang / insert size	21V 26 8702	21V 26 8706	ISO code toolhold-er	Cutting point / joint	Setting angle κ	suitable indexa-ble insert	Ø D_{min}				Pack of insert screws
	Boring bar HSS										
mm	right-hand	left-hand		mm	degrees		mm	mm	mm	mm	
45/S4	XXX	XXX	AH04X SCLDR/LS4	4	97	CDCT S4010.	4.57	2.5	3.58	65	269028 10
46/S4	XXX	XXX	AH05X SCLDR/LS4	5	95	CDCT S4010.	5.78	3	4.6	65	269028 10
50/S4	XXX	XXX	AH06X SCLDR/LS4	6	95	CDCT S4010.	6.92	3.5	5.54	75	269028 10
66/S4	XXX	XXX	AH08H SCLDR/LS4	8	95	CDCT S4010.	9.05	4.5	7.49	100	269028 10

3×D | DIN 8024

A.. SCLD 95° / 97° boring bars for indexable inserts CDCT S4010.



26 8717

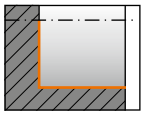
Shank Ø / insert size	21V 26 8717	21V 26 8718	ISO code toolholder	Setting angle κ	suitable indexable in-sert	Ø D_{min}				Pack of insert screws
	Boring bar, steel									
mm	right-hand	left-hand		degrees		mm	mm	mm	mm	
4/S4	XXX	XXX	A04X SCLDR/LS4	97	CDCT S4010.	4.57	2.41	3.58	65	269028 10
5/S4	XXX	XXX	A05X SCLDR/LS4	95	CDCT S4010.	5.78	2.95	4.6	65	269028 10
6/S4	XXX	XXX	A06X SCLDR/LS4	95	CDCT S4010.	6.92	3.73	5.54	65	269028 10
8/S4	XXX	XXX	A08X SCLDR/LS4	95	CDCT S4010.	9.05	4.7	7.49	76	269028 10

Indexable inserts CDCT S4010.

Grade		HB7035	HB7125-1	HU7310	HB7410	
21I 26 8520	CDCT S40101	XXX	XXX	XXX	XXX	10
21I 26 8530	CDCT S40102	XXX	XXX	XXX	XXX	10
21I 26 8540	CDCT S40104	XXX	XXX	–	XXX	10
●		P	M	N	Ti	
○		K	–	–	–	
⚙		●	●	●	●	
Chip breaker		SF	VS	AF	TIS	
a_p	mm	0.05 – 0.23	0.05 – 0.23	0.05 – 0.75	0.05 – 0.23	
f	mm/rev.	0.03 – 0.25	0.05 – 0.23	0.03 – 0.25	0.05 – 0.23	
v_c main application	m/min	60 – 150	60 – 140	50 – 300	40 – 90	
v_c secondary application	m/min	60 – 150	–	–	–	

8×D | Carbide | DIN 8024

E.. SGL. 95° boring bars for indexable inserts GPCT S5010. / GCCT 06020.

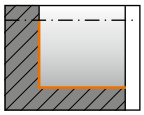


26 8732

Overhang / insert size	21V 26 8732 Boring bar carbide right-hand	21V 26 8736 Boring bar carbide left-hand	ISO code toolholder	Cutting point / joint	suitable indexable insert	⌀ D_{min}				Pack of insert screws
mm				mm		mm	mm	mm	mm	
75/S5	XXX	XXX	E06J SGLPR/LS5	6	GPCT S5010.	9.15	5.60	5.54	110	269028 6
85/S5	XXX	XXX	E08K SGLPR/LS5	8	GPCT S5010.	10.72	6.40	7.49	125	269028 6
85/06	XXX	XXX	E10K SGLCR/L06	10	GCCT 06020.	13.54	8.15	9.5	125	269028 11
100/06	XXX	XXX	E12M SGLCR/L06	12	GCCT 06020.	15.52	9,15	11.33	150	269028 11

5×D | HSS | DIN 8024

AH.. SGLP 95° boring bars for indexable inserts GPCT S5010.

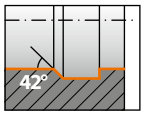


26 8722

Overhang / insert size	21V 26 8722 Boring bar HSS right-hand	21V 26 8726 Boring bar HSS left-hand	ISO code toolholder	Cutting point / joint	suitable indexable insert	⌀ D_{min}						Pack of insert screws
mm				mm		mm	mm	mm	mm	mm	mm	
65/S5	XXX	XXX	AH0712H SGLPR/LS5	12	GPCT S5010.	9.15	5.60	11.15	7	25	100	269028 6
66/S5	XXX	XXX	AH0812H SGLPR/LS5	12	GPCT S5010.	10.72	6.40	11.15	8	32	100	269028 6

5×D | HSS | DIN 8024

AH.. SGSP 45° boring bars for indexable inserts GPCT S5010.



26 8802

Overhang / insert size	21V 26 8802 Boring bar HSS right-hand	21V 26 8806 Boring bar HSS left-hand	ISO code toolholder	Cutting point / joint	suitable indexable insert	⌀ D_{min}						Pack of insert screws
mm				mm		mm	mm	mm	mm	mm	mm	
65/S5	XXX	XXX	AH0812H SGSPR/LS5	12	GPCT S5010.	10.72	6.40	11.15	8	32	100	269028 6

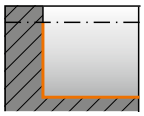
Indexable inserts GPCT S5010. / GCCT 06020.

Grade		HB7035	HB7125-1	HU7310	HB7410	
21I 26 8560	GPCT S50102	XXX	XXX	XXX	XXX	10
21I 26 8570	GPCT S50104	XXX	XXX	–	XXX	10
21I 26 8590	GCCT 060202	XXX	XXX	XXX	XXX	10
21I 26 8600	GCCT 060204	XXX	XXX	–	XXX	10
●		P	M	N	Ti	
○		K	–	–	–	
⚙		◉	◉	◉	◉	
Chip breaker		SF	VS	AF	TIS	
a_p	mm	0.05 – 0.35	0.05 – 0.35	0.05 – 1.6	0.05 – 0.35	
f	mm/rev.	0.03 – 0.25	0.05 – 0.23	0.03 – 0.25	0.05 – 0.23	
v_c main application	m/min	60 – 150	60 – 140	50 – 300	40 – 90	
v_c secondary application	m/min	60 – 150	–	–	–	

8×D | Carbide | DIN 8024

E.. STLD 95° boring bars for indexable inserts TDAT 07010.

26 8822

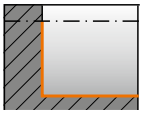


Overhang / insert size	21V 26 8822	21V 26 8826	ISO code toolholder	Cutting point / joint	suitable indexable insert	⌀ D_{min}				Pack of insert screws
	Boring bar carbide									
mm	right-hand	left-hand		mm		mm	mm	mm	mm	
75/07	XXX	XXX	E06J STLDR/L07	6	TDAT 07010.	7.06	3,71	5.54	110	269028 12
85/07	XXX	XXX	E08K STLDR/L07	8	TDAT 07010.	9.14	4,80	7.49	125	269028 12

5×D | HSS | DIN 8024

AH.. STLD 95° boring bars for indexable inserts TDAT 07010.

26 8812



Overhang / insert size	21V 26 8812	21V 26 8816	ISO code toolholder	Cutting point / joint	suitable indexable insert	⌀ D_{min}				Pack of insert screws
	Boring bar HSS									
mm	right-hand	left-hand		mm		mm	mm	mm	mm	
50/07	XXX	XXX	AH06X STLDR/L07	6	TDAT 07010.	7.06	3,71	5.54	75	269028 12
66/07	XXX	XXX	AH08H STLDR/L07	8	TDAT 07010.	9.14	4,80	7.49	100	269028 12

Indexable inserts TDAT 07010.

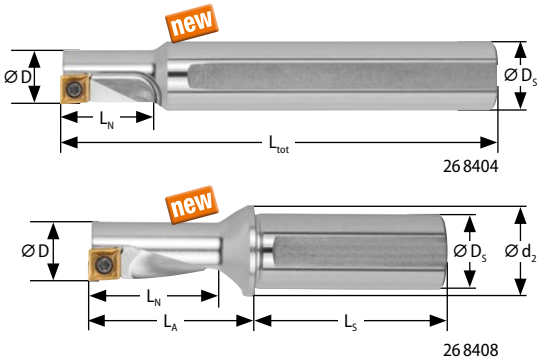
Grade		HB7035	HB7125-1	HB7410	
21I 26 8620	TDAT 070101	XXX	XXX	XXX	10
21I 26 8630	TDAT 070102	XXX	XXX	XXX	10
21I 26 8640	TDAT 070104	XXX	XXX	XXX	10
●		P	M	Ti	
○		K	–	–	
⚙		◉	◉	◉	
Chip breaker		SF	VS	TIS	
a_p	mm	0.05 – 0.23			
f	mm/rev.	0.03 – 0.25	0.05 – 0.23	0.05 – 0.23	
v_c main application	m/min	60 – 150	60 – 140	40 – 90	
v_c secondary application	m/min	60 – 150	–	–	

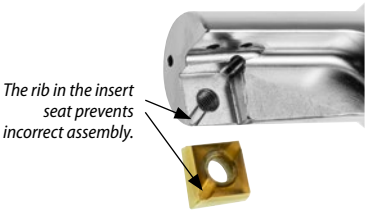
„4 in 1“ drilling and turning tools

26 8404/8405 – Plain shank.
26 8408/8409 – Plain shank **with collar.**

Application:
1. Facing of end faces.
2. Drilling (drilling out and drilling from solid) – flat drilled hole end.
3. Internal longitudinal turning.
4. External longitudinal turning.

Note:
- Choose corner radii and toolholder size as large as possible.
- **Drilling tolerance + 0.15 mm** (for drilling processes with a driven tool).
- When drilling greater than nominal ∅, residual material will remain.
- **Always use internal cooling for drilling (at least 5 bar).**





∅ D	21X 26 8404	21X 26 8405	21X 26 8408	21X 26 8409	L$_A$	L$_s$	L$_N$		∅ D$_s$	∅ d$_2$	L$_{tot}$	suitable indexable insert	Pack of insert screws
	“4 in 1” drilling and turning tool												
	1.5×D	1.5×D	2.25×D	2.25×D	26 8408 26 8409	26 8408 26 8409	26 8404 26 8405	26 8408 26 8409		26 8408 26 8409	26 8404 26 8405		
mm	right-hand	left-hand	right-hand	left-hand	mm	mm	mm	mm	mm	mm	mm		
10	XXX	XXX	XXX	XXX	29	42	15	22.5	12	16	90	ZCMX 05..	269028 40 (IP6; 0.6 Nm)
12	XXX	XXX	XXX	XXX	35	45	18	27	16	20	100	ZCMX 06..	269028 41 (IP7; 0.9 Nm)
16	XXX	XXX	XXX	XXX	43	50	24	38.5	20	25	125	ZCMX 08..	269028 42 (IP9; 1.4 Nm)
20	XXX	XXX	XXX	XXX	57.5	56	30	46	25	32	150	ZCMX 10..	269028 43 (IP10; 2 Nm)

Indexable inserts ZCMX.. for „4 in 1“ drilling and turning tools

Size HBZ030 – Harder substrate for longer tool life with thinner CVD coating.
Especially for facing and longitudinal turning applications.
Size HBZ025; HBZ035; HBZ140 –
General-purpose medium grit substrate with PVD coating.
First choice for turning and drilling applications.

Grade		HBZ025	HBZ030	HBZ035	HBZ120	HBZ140	HUZ310	HBZ310		suitable for tool ∅ D mm
21E 26 8419	ZCMX 050202	–	–	–	–	–	XXX	XXX	10	10
21E 26 8420	ZCMX 050204	XXX	XXX	XXX	XXX	XXX	XXX	XXX	10	10
21E 26 8421	ZCMX 060202	–	–	–	–	–	XXX	XXX	10	12
21E 26 8423	ZCMX 060204	XXX	XXX	XXX	XXX	XXX	XXX	XXX	10	12
21E 26 8424	ZCMX 080302	–	–	–	–	–	XXX	XXX	10	16
21E 26 8425	ZCMX 080304	XXX	XXX	XXX	XXX	XXX	XXX	XXX	10	16
21E 26 8427	ZCMX 080308	XXX	XXX	XXX	XXX	XXX	–	–	10	16
21E 26 8429	ZCMX 10T302	–	–	–	–	–	XXX	XXX	10	20
21E 26 8433	ZCMX 10T304	–	–	–	–	–	XXX	XXX	10	20
21E 26 8434	ZCMX 10T308	XXX	XXX	XXX	XXX	XXX	–	–	10	20
●		P	P	P	M	M	N	N		
⚙		●	●	◪	●	◪	●	●		
a$_p$	mm	0.4 – 2	0.4 – 2	0.4 – 2	0.4 – 2	0.4 – 2	0.2 – 4	0.2 – 4		
Feed rate when turning	mm	0.1 – 0.3	0.1 – 0.3	0.1 – 0.3	0.1 – 0.3	0.1 – 0.3	0.05 – 0.4	0.05 – 0.4		
Feed rate when drilling	mm	0.03 – 0.12	0.03 – 0.12	0.03 – 0.12	0.03 – 0.12	0.03 – 0.12	0.03 – 0.3	0.03 – 0.3		
v$_c$ main application	m/min	90 – 210	50 – 190	50 – 190	0.03 – 0.12	0.03 – 0.12	200 – 600	200 – 600		

„5 in 1“ drilling and turning tools

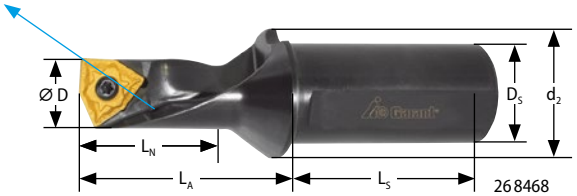
26 8463/8464 – Plain shank.
26 8467/8468 – Plain shank **with collar.**

Application: Face turning, longitudinal turning, drilling, internal longitudinal turning, countersinking.

Note:
- Choose corner radii as large as possible.
- **Always use internal cooling for drilling (at least 5 bar).**

26 8467/8468 – Use the drilling and turning tool **in long chipping structural steels and long chipping stainless steels only up to 1.5×D.**

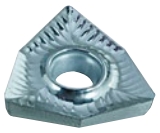
26 8463



26 8468

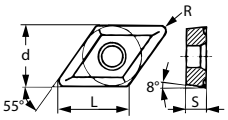
Ø D	21K 26 8463	21K 26 8464	21K 26 8467	21K 26 8468	Bore Ø tolerance D	L_A	L_S	L_N		Ø D_s		Ø d_2	L_{tot}	Indexable insert No. 268472 – 268498	Pack of insert screws
	"5 in 1" drilling and turning tool														
	1.5×D	1.5×D	2.25×D	2.25×D											
mm	right-hand	left-hand	right-hand	left-hand	mm	26 8467 26 8468 mm	26 8467 26 8468 mm	26 8463 26 8464 mm	26 8467 26 8468 mm	26 8463 26 8464 mm	26 8467 26 8468 mm	26 8467 26 8468 mm	26 8463 26 8464 mm		
8	XXX	XXX	XXX	XXX	0/+0.22	22.5	38	12	18	12	10	12	80	WCHX 0401..	269028 30
10	XXX	XXX	XXX	XXX	0/+0.22	28	42	15	22.5	12	12	16	90	WCHX 05T1..	269028 31
11	XXX	XXX	XXX	XXX	0/+0.27	32	45	16.5	24.75	16	16	20	100	WCHX 0602..	269028 32
15	XXX	XXX	XXX	XXX	0/+0.27	43	50	22.5	33.75	20	20	25	125	WCHX 0703..	269028 33
18	XXX	XXX	XXX	XXX	0/+0.33	53	56	27	40.5	25	25	32	135	WCHX 0903..	269028 34
20	XXX	XXX	XXX	XXX	0/+0.33	56	56	30	45	25	25	32	150	WCHX 10T3..	269028 35
26	XXX	XXX	XXX	XXX	0/+0.33	73	60	39	58.5	32	32	40	180	WCHX 1305..	269028 36

Indexable inserts WCHX.. for „5 in 1“ drilling and turning tools



Type		SM	ALU	UNI		suitable for tool Ø D mm
21K 26 8472	WCHX 040102	XXX	XXX	XXX	10	8
21K 26 8474	WCHX 040104	XXX	XXX	XXX	10	8
21K 26 8476	WCHX 05T102	XXX	XXX	XXX	10	10
21K 26 8478	WCHX 05T104	XXX	XXX	XXX	10	10
21K 26 8480	WCHX 060202	XXX	XXX	XXX	10	11
21K 26 8482	WCHX 060204	XXX	XXX	XXX	10	11
21K 26 8484	WCHX 070304	XXX	XXX	XXX	10	15
21K 26 8486	WCHX 070308	XXX	XXX	XXX	10	15
21K 26 8488	WCHX 090304	XXX	XXX	XXX	10	18
21K 26 8490	WCHX 090308	XXX	XXX	XXX	10	18
21K 26 8492	WCHX 10T304	XXX	XXX	XXX	10	20
21K 26 8494	WCHX 10T308	XXX	XXX	XXX	10	20
21K 26 8496	WCHX 130508	XXX	XXX	XXX	10	26
●		P	N	UNI		
○		M	K	–		
Grade		HB7120	HU70AL	HB7130		
v_c main application	m/min	110 – 220	300 – 600	65 – 200		
v_c secondary application	m/min	110 – 140	180	–		

KOMET® Unisix® indexable inserts type W79 and W60



right-hand

right-hand

right-hand

Type			P25M	BK6425	K10		Rake degrees
24T 26 8855	DOHT 070202 right-hand	W60	–	XXX	XXX	10	12
24T 26 8856	DOHT 11T304 right-hand	W60	XXX	XXX	XXX	10	12
24T 26 8857	DOHT 070202 left-hand	W60	–	XXX	XXX	10	12
24T 26 8858	DOHT 11T304 left-hand	W60	–	XXX	XXX	10	12
24T 26 8859	DOHT 070202 neutral	W79	XXX	XXX	XXX	10	12
24T 26 8860	DOHT 11T304 neutral	W79	XXX	XXX	XXX	10	12
●			P	P	K		
○			M	M	N		
⚙			▨	▨	●		
a_p		mm	0.5 – 1.5	0.5 – 1.5	0.5 – 2.5		
f		mm/rev.		0.05 – 0.25			
v_c main application		m/min	120 – 300	120 – 300	200		
v_c secondary application		m/min	100 – 180	100 – 180	300 – 500		

KOMET® Indexable inserts type W30 and W57

left-hand

left-hand

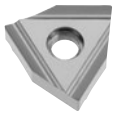
left-hand

neutral

left-hand

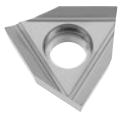
Type			P25M	BK6425	BK8425	BK8430	K10		Rake degrees
24T 26 8871	TOHX 06T102 right-hand	W30	–	XXX	–	–	–	10	6
24T 26 8872		W30	–	XXX	–	–	–	10	12
24T 26 8873	TOHX 090202 right-hand	W30	–	XXX	–	–	–	10	6
24T 26 8874		W30	–	XXX	–	–	XXX	10	12
24T 26 8875	TOHX 140305 right-hand	W30	–	XXX	–	–	–	10	6
24T 26 8876		W30	–	XXX	–	–	–	10	12
24T 26 8877	TOHX 06T102 left-hand	W30	XXX	XXX	–	–	XXX	10	6
24T 26 8878		W30	XXX	XXX	XXX	–	XXX	10	12
24T 26 8879		W30	–	–	–	–	XXX	10	20
24T 26 8880	TOHX 090202 left-hand	W30	XXX	XXX	–	–	XXX	10	6
24T 26 8881		W30	XXX	XXX	XXX	–	XXX	10	12
24T 26 8882		W30	–	–	–	–	XXX	10	20
24T 26 8883	TOHX 140305 left-hand	W30	XXX	XXX	–	–	XXX	10	6
24T 26 8884		W30	XXX	XXX	XXX	–	XXX	10	12
24T 26 8885		W30	–	–	–	–	XXX	10	20
24T 26 8863	TOGX 06T102 neutral	W57	–	–	–	XXX	–	10	14
24T 26 8886	TOHX 06T103 neutral	W30	–	–	XXX	–	–	10	0
24T 26 8864	TOGX 06T104 neutral	W57	–	–	–	XXX	–	10	14
24T 26 8866	TOGX 090202 neutral	W57	–	–	–	XXX	–	10	14
24T 26 8887	TOHX 090204 neutral	W30	XXX	–	XXX	–	XXX	10	0
24T 26 8868	TOGX 090204 neutral	W57	–	–	–	XXX	–	10	14
24T 26 8888	TOHX 140305 neutral	W30	XXX	–	XXX	–	XXX	10	0
●			P	P	P	P	K		
○			M	M	M	M	N		
⚙			▨	▨	◔	▨	●		
a_p		mm	0.5 – 1.5	0.5 – 1.5	0.5 – 1.5	0.5 – 1.5	0.5 – 2.5		
f		mm/rev.	0.1 – 0.3	0.1 – 0.3	0.1 – 0.2	0.1 – 0.3	0.1 – 0.3		
v_c main application		m/min	120 – 300	120 – 300	120 – 260	120 – 300	200		
v_c secondary application		m/min	120 – 180	120 – 180	120 – 160	120 – 180	300 – 500		

KOMET® Unisix® indexable inserts type W04



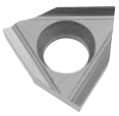
Type			P25	P40		Rake degrees
24T 26 8890	WNHX 08T302 right-hand	W04	XXX	XXX	10	18
24T 26 8891	WNHX 100404 right-hand	W04	XXX	XXX	10	18
24T 26 8892	WNHX 120606 right-hand	W04	XXX	–	10	18
●			P	P		
○			M	M		
⚙						
a_p		mm	0.5 – 1.5	0.5 – 1.2		
f		mm/rev.	0.05 – 0.25	0.05 – 0.2		
v_c main application		m/min	120 – 300	100 – 220		
v_c secondary application		m/min	100 – 180	80 – 160		

KOMET® Unisix® indexable inserts type W00 and W01



right-hand

right-hand



right-hand

right-hand

right-hand

Type			P25M	BK6425	P40	BK6440	K10		Rake degrees
24T 26 8894	WOHX 02T001 right-hand	W00	–	–	XXX	XXX	–	10	12
24T 26 8896	WOHX 05T302 right-hand	W01	XXX	XXX	–	–	–	10	12
24T 26 8897	WOHX 060302 right-hand	W00	XXX	XXX	–	–	XXX	10	6
24T 26 8898		W00	XXX	XXX	–	–	–	10	12
24T 26 8899	WOHX 06T302 right-hand	W01	XXX	–	–	–	–	10	6
24T 26 8900		W01	XXX	–	–	–	–	10	12
24T 26 8901	WOHX 080402 right-hand	W01	XXX	–	–	–	–	10	6
24T 26 8902		W01	XXX	XXX	–	–	–	10	12
24T 26 8903	WOHX 08T302 right-hand	W00	XXX	XXX	–	–	–	10	6
24T 26 8904		W00	XXX	XXX	–	–	XXX	10	12
24T 26 8905		W00	–	–	–	–	XXX	10	20
24T 26 8906	WOHX 100504 right-hand	W01	XXX	–	–	–	–	10	6
24T 26 8907		W01	XXX	–	–	–	–	10	12
24T 26 8908	WOHX 10T304 right-hand	W00	XXX	XXX	–	–	–	10	6
24T 26 8909		W00	XXX	XXX	–	–	–	10	12
24T 26 8910		W00	–	XXX	–	–	–	10	20
24T 26 8911	WOHX 02T001 left-hand	W00	–	–	XXX	XXX	–	10	12
24T 26 8912	WOHX 05T302 left-hand	W01	XXX	–	–	–	–	10	6
24T 26 8914	WOHX 060302 left-hand	W00	XXX	–	–	–	(XXX)	10	6
24T 26 8915		W00	XXX	–	–	–	–	10	12
24T 26 8916	WOHX 06T302 left-hand	W01	XXX	XXX	–	–	–	10	6
24T 26 8917		W01	XXX	–	–	–	–	10	12
24T 26 8918	WOHX 080402 left-hand	W01	XXX	–	–	–	–	10	6
24T 26 8919	WOHX 08T302 left-hand	W00	XXX	XXX	–	–	–	10	6
24T 26 8920		W00	XXX	XXX	–	–	XXX	10	12
24T 26 8921	WOHX 10T304 left-hand	W00	XXX	–	–	–	–	10	6
24T 26 8922		W00	XXX	–	–	–	–	10	12
●			P	P	P	P	K		
○			M	M	M	M	N		
⚙									
a_p		mm	0.5 – 1.5	0.5 – 1.5	0.5 – 1.2	0.5 – 1.2	0.5 – 2.5		
f		mm/rev.	0.1 – 0.3	0.1 – 0.3	0.05 – 0.2	0.05 – 0.2	0.1 – 0.3		
v_c main application		m/min	120 – 300	120 – 300	100 – 220	100 – 240	200		
v_c secondary application		m/min	120 – 180	120 – 180	80 – 160	80 – 160	300 – 500		

Garant Mini boring bars for indexable inserts

- Carbide insert screwed on to the end face, positive force transmission due to end face serrations.
- Insert change is very easy to perform.

27 0006 – Low-vibration carbide shank with soldered steel head and hardened insert seat.

Note:
27 0006 Size 42/6; 50/6; 64/8 – **Only** for boring and chamfering!

27 0002

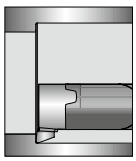
27 0006

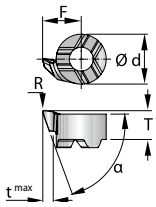
Overhang L_A / insert size d	21V 27 0002 Mini-boring bar, steel	21V 27 0006 Mini-boring bar, carbide	Cutting point / joint				Insert screw
mm	right-hand	right-hand	mm	mm	mm	mm	
12/6	XXX	–	16	15.6	12	80	279815 10
21/6	–	XXX	12	11.5	21	80.5	279815 10
30/6	–	XXX	12	11.5	30	90.5	279815 10
42/6	–	XXX	12	11.5	42	100.5	279815 10
50/6	–	XXX	12	11.5	50	115	279815 10
12/8	XXX	–	16	15.6	12	80	279815 11
29/8	–	XXX	12	11.5	29	95	279815 11
42/8	–	XXX	12	11.5	42	110	279815 11
56/8	–	XXX	12	11.5	56	120	279815 11
64/8	–	XXX	12	11.5	64	130	279815 11

Garant Mini indexable inserts

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 67 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	CuZn	Graphite GRP CRP	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	M	M	S	K	N	N		●	○	○	●	
27 0020–27 0140	80	80	60	80	80	80	80	60				70	50	30	60	80							

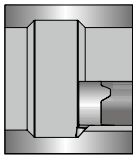
For boring out

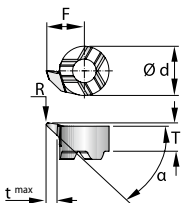




Ø D_{min}	211 27 0020 Mini indexable insert for internal boring out		Ø d	T	F	t_{max}	R	α	f	$a_{p\,max}$
mm	right-hand HB720		mm	mm	mm	mm	mm	degrees	mm/rev.	mm
7,8	XXX	10	6	3.6	4.65	1.3	0.2	70	0.02 – 0.03	0.15 – 0.5
11	XXX	10	8	3.95	6.7	2.3	0.2	70	0.02 – 0.03	0.15 – 0.5

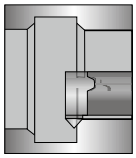
For copying

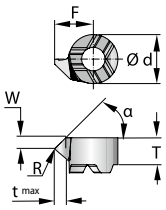




Ø D_{min}	211 27 0040 Mini indexable insert for internal copying		Ø d	T	F	t_{max}	R	α	f	$a_{p\,max}$
mm	right-hand HB720		mm	mm	mm	mm	mm	degrees	mm/rev.	mm
7,8	XXX	10	6	3.6	4.65	1.2	0.2	43	0.02 – 0.03	0.15 – 0.5
11	XXX	10	8	3.95	6.7	2.3	0.2	43	0.02 – 0.03	0.15 – 0.5

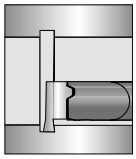
For chamfering

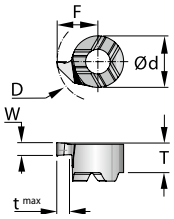




Ø D_{min}	211	27 0060		Ø d	T	F	t_{max}	R	W	α	f	$a_{p\,max}$
		Mini indexable insert for internal chamfering **right-hand**										
mm		**HB720**		mm	mm	mm	mm	mm	mm	degrees	mm/rev.	mm
8		XXX	**10**	6	3.8	4.65	1	0.2	1.3	45	0.02 – 0.03	0.15 – 0.5

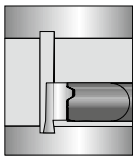
For internal grooving

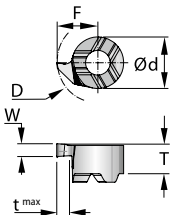




Ø D_{min} / W	211	27 0090		Ø d	w	T	F	t_{max}	f
		Mini indexable insert for internal grooving **right-hand**							
mm		**HB720**		mm	mm	mm	mm	mm	mm/rev.
8/1,0		XXX	**10**	6	1	3.6	4.8	1	0.02 – 0.03
8/1,5		XXX	**10**	6	1.5	3.6	4.8	1	0.02 – 0.03
8/2,0		XXX	**10**	6	2	3.6	4.8	1	0.02 – 0.03
11/1,0		XXX	**10**	8	1	3.95	6.7	2.3	0.02 – 0.03
11/1,5		XXX	**10**	8	1.5	3.95	6.7	2.3	0.02 – 0.03
11/2,0		XXX	**10**	8	2	3.95	6.7	2.3	0.02 – 0.03
11/2,5		XXX	**10**	8	2.5	3.95	6.7	2.3	0.02 – 0.03

For grooving to DIN 472

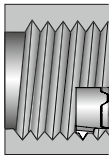


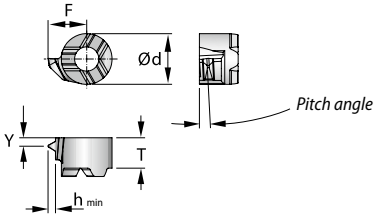


DIN 472

Ø D_{min} / slot width m (H13)	211	27 0110		Ø d	w	T	F	t_{max}	f
		Mini indexable insert for internal grooving, DIN 472 **right-hand**							
mm		**HB720**		mm	mm	mm	mm	mm	mm/rev.
8/0,9		XXX	**10**	6	0.93	3.6	4.8	1	0.02 – 0.03
8/1,1		XXX	**10**	6	1.2	3.6	4.8	1	0.02 – 0.03
8/1,3		XXX	**10**	6	1.4	3.6	4.8	1	0.02 – 0.03
8/1,6		XXX	**10**	6	1.7	3.6	4.8	1	0.02 – 0.03
11/0,9		XXX	**10**	8	0.93	3.95	6.7	1.5	0.02 – 0.03
11/1,1		XXX	**10**	8	1.2	3.95	6.7	2.3	0.02 – 0.03
11/1,3		XXX	**10**	8	1.4	3.95	6.7	2.3	0.02 – 0.03
11/1,6		XXX	**10**	8	1.7	3.95	6.7	2.3	0.02 – 0.03

For threading



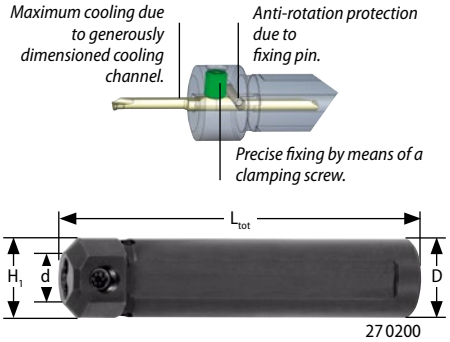


M | MF | 60° | DIN 13

Pitch	211	27 0140		Ø d	T	F	h_{min}	Y	Pitch angle	Number of passes
		Mini indexable insert for internal threading **right-hand**								
mm		**HB720**		mm	mm	mm	mm	mm	degrees	
0,5		XXX	**10**	6	3.6	3.84	0.29	0.4	1	4 – 6
0,75		XXX	**10**	6	3.6	4.19	0.43	0.6	1.5	4 – 7
1		XXX	**10**	6	3.6	4.29	0.58	0.7	2	4 – 8
1,25		XXX	**10**	6	3.6	4.44	0.72	0.9	2.5	5 – 9
1,5		XXX	**10**	6	3.6	4.58	0.87	1	3	6 – 10
1,75		XXX	**10**	6	3.6	4.8	1.01	1.2	3	7 – 12
2		XXX	**10**	8	3.95	6.47	1.15	1.3	2.5	7 – 12

micro-cutter holder

Spare part: Clamp screw No. 279815 3.

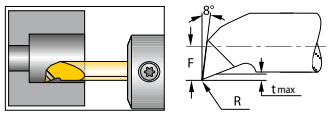


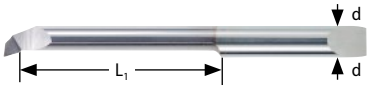
Ø D	27 0200	27 0202	27 0204	H_1		L_{tot}
	Cutter holder					
mm	Ø d = 4 mm	Ø d = 5 mm	Ø d = 6 mm	mm	mm	mm
10	XXX	XXX	–	14	8.8	65
12	XXX	XXX	XXX	16	10.8	70
16	XXX	XXX	XXX	18.6	14.8	75
20	XXX	XXX	XXX	22	18.8	84

Inserts for cutter holders No. 270200 – 270204

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 67 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	CuZn	Graphite GRP CRP	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	M	M	S	K	N	N						
27 0210–27 0398/ 0510–27 0524	250	200	200	160	150	150	80	60	30			90	60	30	90	150			●	○	○	●	
27 0400/0410	200	200	150	160	150	150	80	60	30			90	60	30	90	150			●			●	

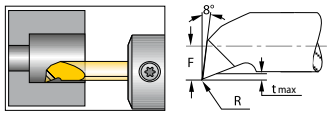
micro-inserts single-ended





Ø D_{min}	27 0510	27 0512	27 0514	27 0516	27 0518	27 0520	27 0522	27 0524	Ø d	F	t_{max}	R
	Boring-out insert, internal, right-hand											
mm	L_1 = 6 mm	L_1 = 10 mm	L_1 = 16 mm	L_1 = 21 mm	L_1 = 26 mm	L_1 = 30 mm	L_1 = 35 mm	L_1 = 40 mm	mm	mm	mm	mm
1	XXX	–	–	–	–	–	–	–	4	0.49	0.15	0.1
1,5	–	XXX	–	–	–	–	–	–	4	0.69	0.15	0.1
2,2	–	XXX	XXX	–	–	–	–	–	4	0.95	0.15	0.1
3,2	–	XXX	XXX	XXX	–	–	–	–	4	1.45	0.15	0.15
4,2	–	XXX	XXX	XXX	XXX	–	–	–	4	1.95	0.3	0.15
5,2	–	XXX	XXX	XXX	XXX	XXX	XXX	–	5	2.45	0.5	0.2
6,2	–	–	XXX	XXX	XXX	XXX	XXX	XXX	6	2.95	0.5	0.2

micro-inserts double-ended



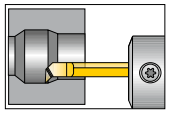
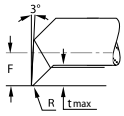
27 0210

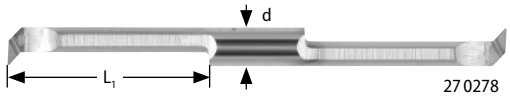
27 0220

27 0250

Ø D_{min}	27 0210	27 0212	27 0214	27 0216	27 0218	27 0220	27 0222	27 0224	Ø d	F	t_{max}	R
	Boring-out insert, internal, right-hand											
mm	L_1 = 6 mm	L_1 = 10 mm	L_1 = 16 mm	L_1 = 21 mm	L_1 = 26 mm	L_1 = 30 mm	L_1 = 35 mm	L_1 = 40 mm	mm	mm	mm	mm
1	XXX	–	–	–	–	–	–	–	4	0.49	0.15	0.1
1,5	–	XXX	–	–	–	–	–	–	4	0.69	0.15	0.1
2,2	–	XXX	XXX	–	–	–	–	–	4	0.95	0.15	0.1
3,2	–	XXX	XXX	XXX	–	–	–	–	4	1.45	0.15	0.15
4,2	–	XXX	XXX	XXX	XXX	–	–	–	4	1.95	0.3	0.15
5,2	–	XXX	XXX	XXX	XXX	XXX	XXX	–	5	2.45	0.5	0.2
6,2	–	–	XXX	XXX	XXX	XXX	XXX	XXX	6	2.95	0.5	0.2

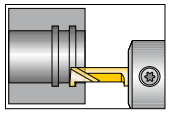
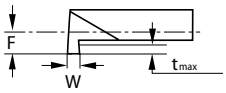
Ø D_{min}	27 0240	27 0242	27 0244	27 0246	27 0248	27 0250	27 0252	27 0254	Ø d	F	t_{max}	R
	Boring-out insert, internal, left-hand											
mm	L_1 = 6 mm	L_1 = 10 mm	L_1 = 16 mm	L_1 = 21 mm	L_1 = 26 mm	L_1 = 30 mm	L_1 = 35 mm	L_1 = 40 mm	mm	mm	mm	mm
1	XXX	–	–	–	–	–	–	–	4	0.49	0.15	0.1
1,5	–	XXX	–	–	–	–	–	–	4	0.69	0.15	0.1
2,2	–	XXX	XXX	–	–	–	–	–	4	0.95	0.15	0.1
3,2	–	XXX	XXX	XXX	–	–	–	–	4	1.45	0.15	0.15
4,2	–	XXX	XXX	XXX	XXX	–	–	–	4	1.95	0.3	0.15
5,2	–	XXX	XXX	XXX	XXX	XXX	XXX	–	5	2.45	0.5	0.2
6,2	–	–	XXX	XXX	XXX	XXX	XXX	XXX	6	2.95	0.5	0.2



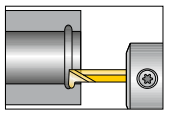
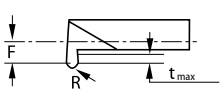
27 0278

∅ D_{min}	27 0270	27 0272	27 0274	27 0278	27 0290	27 0292	27 0294	27 0298	∅ d	F	t_{max}	R
	Copying insert, internal, right-hand				Copying insert, internal, left-hand							
mm	L_1 = 10 mm	L_1 = 16 mm	L_1 = 21mm	L_1 = 30 mm	L_1 = 10 mm	L_1 = 16 mm	L_1 = 21 mm	L_1 = 30 mm	mm	mm	mm	mm
4,2	XXX	XXX	XXX	–	XXX	XXX	XXX	–	4	1.95	0.75	0.15
5,2	–	XXX	XXX	–	–	XXX	XXX	–	5	2.45	0.95	0.2
6,2	–	XXX	XXX	XXX	–	XXX	XXX	XXX	6	2.95	1.75	0.2

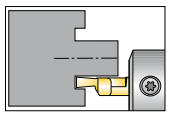
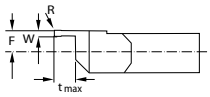
27 0324

∅ D_{min} / W	27 0310	27 0312	27 0314	27 0320	27 0322	27 0324	∅ d	F	t_{max}
	Grooving insert, internal, right-hand			Grooving insert, internal, left-hand					
mm	L_1 = 10 mm	L_1 = 15 mm	L_1 = 20 mm	L_1 = 10 mm	L_1 = 15 mm	L_1 = 20 mm	mm	mm	mm
4,2/1	XXX	XXX	XXX	XXX	XXX	XXX	4	2	0.8
5,2/1	XXX	XXX	XXX	XXX	XXX	XXX	5	2.5	1
5,2/1,5	XXX	XXX	XXX	XXX	XXX	XXX	5	2.5	1
5,2/2	XXX	XXX	XXX	XXX	XXX	XXX	5	2.5	1
6,2/1	XXX	XXX	XXX	XXX	XXX	XXX	6	3	1.8
6,2/1,5	XXX	XXX	XXX	XXX	XXX	XXX	6	3	1.8
6,2/2	XXX	XXX	XXX	XXX	XXX	XXX	6	3	1.8

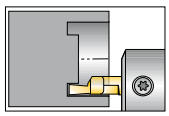
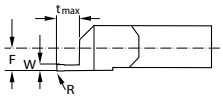
27 0334

∅ D_{min} / W	27 0330	27 0332	27 0334	27 0340	27 0342	27 0344	∅ d	F	t_{max}	R
	Grooving insert, round internal, right-hand			Grooving insert, round internal, left-hand						
mm	L_1 = 15 mm	L_1 = 20 mm	L_1 = 25 mm	L_1 = 15 mm	L_1 = 20 mm	L_1 = 25 mm	mm	mm	mm	mm
4,2/1	XXX	–	–	XXX	–	–	4	1.95	0.8	0.5
5,2/1	–	XXX	–	–	XXX	–	5	2.45	1	0.5
5,2/2	–	XXX	–	–	XXX	–	5	2.45	1	1
6,2/1	–	–	XXX	–	–	XXX	6	2.95	1.8	0.5
6,2/2	–	–	XXX	–	–	XXX	6	2.95	1.8	1

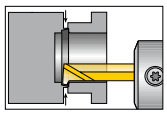
27 0350

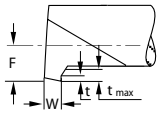
∅ D_{min} / W	27 0350	27 0355	∅ d	F	t_{max}	R
	Axial grooving insert, external, right-hand	Axial grooving insert, external, left-hand				
mm	L_1 = 15 mm	L_1 = 15 mm	mm	mm	mm	mm
6,2/1	XXX	XXX	6	2.95	2	0.1
6,2/1,5	XXX	XXX	6	2.95	3	0.1
6,2/2	XXX	XXX	6	2.95	4	0.1
6,2/2,5	XXX	XXX	6	2.95	5	0.1
6,2/3	XXX	XXX	6	2.95	6	0.1

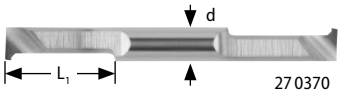



27 0360

∅ D_{min} / W	27 0360	27 0365	∅ d	F	t_{max}	R
	Axial grooving insert, internal, right-hand	Axial grooving insert, internal, left-hand				
mm	L_1 = 15 mm	L_1 = 15 mm	mm	mm	mm	mm
6,2/1	XXX	XXX	6	2.95	2	0.1
6,2/1,5	XXX	XXX	6	2.95	3	0.1
6,2/2	XXX	XXX	6	2.95	4	0.1
6,2/2,5	XXX	XXX	6	2.95	5	0.1
6,2/3	XXX	XXX	6	2.95	6	0.1

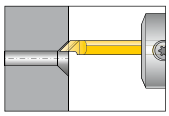


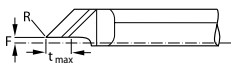




27 0370

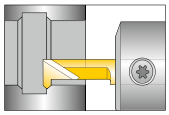
∅ D_{min} / W	27 0370	27 0372	27 0374	27 0376	27 0380	27 0386	∅ d	F	t_{max}	t
	Boring insert, internal, right-hand				Boring insert, internal, left-hand					
mm	L_1 = 15 mm	L_1 = 20 mm	L_1 = 25 mm	L_1 = 30 mm	L_1 = 15 mm	L_1 = 30 mm	mm	mm	mm	mm
5,2/1	XXX	XXX	XXX	XXX	XXX	XXX	5	2.45	0.7	0.3

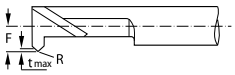




27 0390

∅ D_{min}	27 0390	27 0392	∅ d	F	t_{max}	R
	45° chamfering insert, external, right-hand	45° chamfering insert, external, left-hand				
mm	L_1 = 15 mm	L_1 = 15 mm	mm	mm	mm	mm
1	XXX	XXX	4	0.5	3.5	0.2



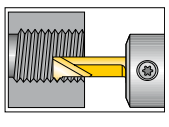


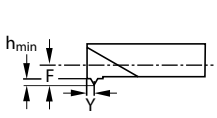
27 0396

∅ D_{min}	27 0396	27 0398	∅ d	F	t_{max}	R
	45° turning/chamfering insert, internal, right-hand	45° turning/chamfering insert, internal, left-hand				
mm	L_1 = 15 mm	L_1 = 15 mm	mm	mm	mm	mm
4,2	XXX	XXX	4	1.95	0.75	0.2
5,2	XXX	XXX	5	2.45	0.95	0.2
6,2	XXX	XXX	6	2.95	1.75	0.2

DIN 13 6H | 60° | M | M-LH | MF | MF-LH

27 0400_3,4/0,5





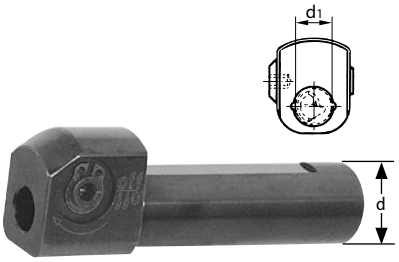
27 0400 _5,8/1

∅ D_{min} / Pitch	27 0400	27 0410	∅ d	F	Y	h_{min}
	Thread turning insert, internal, full profile 60°, right-hand	Thread turning insert, internal, full profile 60°, left-hand				
mm	L_1 = 16 mm	L_1 = 16 mm	mm	mm	mm	mm
3,4/0,5	XXX	XXX	4	0.9	0.4	0.29
4,4/0,5	XXX	XXX	4	1.9	0.4	0.29
4,9/0,5	XXX	XXX	5	1.7	0.4	0.29
5,4/0,5	XXX	XXX	6	1.9	0.4	0.29
3,2/0,7	XXX	XXX	4	0.9	0.5	0.41
4,6/0,75	XXX	XXX	5	1.7	0.6	0.43
5,6/0,75	XXX	XXX	6	1.9	0.6	0.43
4/0,8	XXX	XXX	4	0.9	0.6	0.46
4,8/1	XXX	XXX	4	1.9	0.7	0.58
5,8/1	XXX	XXX	5	2.4	0.7	0.58
6,3/1	XXX	XXX	6	2.9	0.7	0.58
6,5/1,25	XXX	XXX	6	2.9	0.9	0.72
8,3/1,5	XXX	XXX	6	2.9	1	0.87

KOMET® UniTurn® turning toolholder for stationary use

Application: For turning and internal grooving on the lathe.

Note: Toolholders for rotating use available on request.



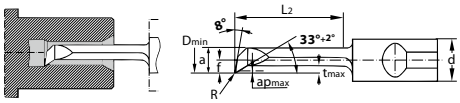
Shank Ø d / Bore Ø d_1		mm	12/4	12/8	16/4	16/8
24S 24 0100	KOMET UniTurn® turning toolholder for stationary use (without boring bar)		XXX	XXX	XXX	XXX

KOMET® UniTurn® cutter inserts

Tool material = BK 82.
From size 5 with internal coolant supply; for smaller diameters, the coolant supply takes place through the toolholder.

Note: Further sizes and types on request.

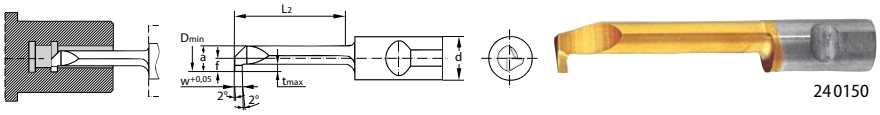
24 0110



Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	K						
24 0110–24 0135	180	180	160	100	90	80	70	70						50	50	30	55	●		●		○	
24 0150–24 0200	145	145	130	80	70	65	55	55						40	40	25	45	●		●		○	

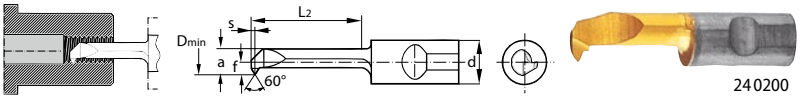
Ø D_{min}	24S 24 0110	24S 24 0114	24S 24 0118	24S 24 0122	24S 24 0126	24S 24 0130	24S 24 0134	$a_{p\,max}$	R	f	a	Ø d	t_{max}	suitable clamping toolholder No. 240100
	KOMET® UniTurn® copying boring bar, right-hand													
mm	L_2 = 10 mm	L_2 = 15 mm	L_2 = 20 mm	L_2 = 25 mm	L_2 = 30 mm	L_2 = 35 mm	L_2 = 40 mm	mm	mm	mm	mm	mm	mm	
3	XXX	XXX	XXX	–	–	–	–	0.2	0.1	1.25	2.7	4	0.7	12/4; 16/4
4	XXX	XXX	XXX	XXX	–	–	–	0.3	0.1	1.75	3.7	4	0.8	12/4; 16/4
5	XXX	XXX	XXX	XXX	XXX	–	–	0.5	0.2	2.25	4.7	8	1	12/8; 16/8
6	–	XXX	XXX	XXX	XXX	XXX	–	0.5	0.2	2.75	5.7	8	1.8	12/8; 16/8
8	–	XXX	XXX	XXX	XXX	XXX	XXX	0.6	0.2	3.75	7.7	8	2.5	12/8; 16/8

Ø D_{min}	24S 24 0111	24S 24 0115	24S 24 0119	24S 24 0123	24S 24 0127	24S 24 0131	24S 24 0135	$a_{p\,max}$	R	f	a	Ø d	t_{max}	suitable clamping toolholder No. 240100
	KOMET® UniTurn® copying boring bar, left-hand													
mm	L_2 = 10 mm	L_2 = 15 mm	L_2 = 20 mm	L_2 = 25 mm	L_2 = 30 mm	L_2 = 35 mm	L_2 = 40 mm	mm	mm	mm	mm	mm	mm	
3	XXX	XXX	XXX	–	–	–	–	0.2	0.1	1.25	2.7	4	0.7	12/4; 16/4
4	XXX	XXX	XXX	XXX	–	–	–	0.3	0.1	1.75	3.7	4	0.8	12/4; 16/4
5	XXX	XXX	XXX	(XXX)	XXX	–	–	0.5	0.2	2.25	4.7	8	1	12/8; 16/8
6	–	XXX	XXX	XXX	XXX	XXX	–	0.5	0.2	2.75	5.7	8	1.8	12/8; 16/8
8	–	XXX	XXX	(XXX)	XXX	XXX	XXX	0.6	0.2	3.75	7.7	8	2.5	12/8; 16/8



24 0150

Ø D_{min} / groove width w	24S 24 0150	24S 24 0154	24S 24 0158	24S 24 0162	24S 24 0166	24S 24 0170	24S 24 0174	f	a	Ø d	t_{max}	suitable clamping toolholder No. 240100
	KOMET® UniTurn® grooving boring bar, right-hand											
mm	L_2 = 10 mm	L_2 = 15 mm	L_2 = 20 mm	L_2 = 25 mm	L_2 = 30 mm	L_2 = 35 mm	L_2 = 40 mm	mm	mm	mm	mm	
3/1	XXX	XXX	–	–	–	–	–	1.25	2.7	4	0.7	12/4; 16/4
4/1	(XXX)	(XXX)	(XXX)	(XXX)	–	–	–	1.25	3.7	4	0.8	12/4; 16/4
5/1	XXX	XXX	(XXX)	(XXX)	XXX	–	–	2.25	4.7	8	1	12/8; 16/8
5/1,5	–	–	(XXX)	–	–	–	–	2.25	4.7	8	1	12/8; 16/8
5/2	(XXX)	(XXX)	XXX	(XXX)	(XXX)	–	–	2.25	4.7	8	1	12/8; 16/8
6/1	–	XXX	XXX	–	(XXX)	(XXX)	–	2.75	5.7	8	1.8	12/8; 16/8
6/1,5	–	XXX	XXX	–	XXX	–	–	2.75	5.7	8	1.8	12/8; 16/8
6/2	–	XXX	XXX	(XXX)	(XXX)	(XXX)	–	2.75	5.7	8	1.8	12/8; 16/8
8/1	–	XXX	XXX	(XXX)	XXX	(XXX)	XXX	3.75	7.7	8	2.5	12/8; 16/8
8/1,5	–	XXX	XXX	(XXX)	XXX	(XXX)	–	3.75	7.7	8	2.5	12/8; 16/8
8/2	–	XXX	XXX	(XXX)	XXX	XXX	XXX	3.75	7.7	8	2.5	12/8; 16/8

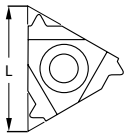


24 0200

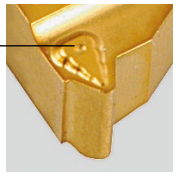
Ø D_{min} / coarse-pitch thread	24S 24 0200	for pitches up to	f	a	Ø d	s	suitable clamping toolholder No. 240100
	KOMET® UniTurn® internal threading bar, right-hand						
mm	L_2 = 15 mm	mm	mm	mm	mm	mm	
5/M6	XXX	1	2.25	4.7	8	0.55	12/8; 16/8
6/M8	XXX	1.25	2.75	5.7	8	0.65	12/8; 16/8
8/M10	XXX	1.5	3.75	7.7	8	0.75	12/8; 16/8
8/M12	XXX	1.75	3.75	7.7	8	0.85	12/8; 16/8

DIN 13 6g | M | M-LH | MF | MF-LH | 60°

Garant Threading inserts, metric external thread



- *Sintered chip breaker CB.*
- *Ground profile.*
- *Reduces the incidence of edge build-upn.*

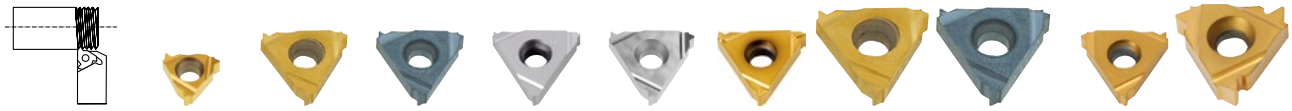


Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 67 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	CuZn	Graphite GRP CRP	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	M	M	S	K	N	N						
HB7010		**250**	**180**	**150**	**150**	**130**	**100**	**90**	40			100	100	50	**130**	150			●			●	○
HB7020		200	180	160	**160**	**120**	**90**	70	30			90	90	50	**120**	120			○	●	●	●	○
HB7125												**120**	**120**	**60**					●	●	●	●	
HU7315	**200**	**100**	**90**											50		**110**			●	●	●	●	

Full profile

Full profile inserts 60° for external threads to DIN / ISO R 262 (DIN 13) tolerance class 6g.

27 0706 – Sintered chip breaker CB.



Pitch	27 0699	27 0700	27 0702	27 0704	27 0705	27 0706	27 0710	27 0712	27 0720	27 0730	
	Full profile insert 60°, external, right-hand								Full profile insert 60°, external, left-hand		
						CB					
mm	HB7010	HB7010	HB7020	HB7125	HU7315	HB7010	HB7010	HB7020	HB7010	HB7010	
0,5	XXX	XXX	XXX	XXX	XXX	XXX	–	–	XXX	–	10
0,7	–	XXX	XXX	XXX	XXX	–	–	–	XXX	–	10
0,75	XXX	XXX	XXX	XXX	XXX	XXX	–	–	XXX	–	10
0,8	–	XXX	XXX	XXX	XXX	–	–	–	XXX	–	10
1	XXX	XXX	XXX	XXX	XXX	XXX	–	–	XXX	–	10
1,25	XXX	XXX	XXX	XXX	XXX	XXX	–	–	XXX	–	10
1,5	XXX	XXX	XXX	XXX	XXX	XXX	–	–	XXX	–	10
1,75	XXX	XXX	XXX	XXX	XXX	XXX	–	–	XXX	–	10
2	–	XXX	XXX	XXX	XXX	XXX	–	–	XXX	–	10
2,5	–	XXX	XXX	XXX	XXX	XXX	–	–	XXX	–	10
3	–	XXX	XXX	XXX	XXX	XXX	–	–	XXX	–	10
3,5	–	XXX	XXX	XXX	XXX	XXX	XXX	XXX	–	XXX	10
4	–	–	–	–	–	–	XXX	XXX	–	XXX	10
4,5	–	–	–	–	–	–	XXX	XXX	–	XXX	10
5	–	–	–	–	–	–	XXX	XXX	–	XXX	10
6	–	–	–	–	–	–	XXX	XXX	–	XXX	10
Thickness mm	3.17	3.6	3.6	3.6	3.6	3.6	4.76	4.76	3.6	4.76	
Insert size L mm	11	16	16	16	16	16	22	22	16	22	

Partial profile

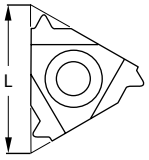
Partial profile insert 60° for external threads.

27 0741 – Sintered chip breaker CB.

Pitch	27 0738	27 0740	27 0741	27 0744	27 0745	27 0747	
	Partial profile insert 60°, external, right-hand				Partial profile insert 60°, external, left-hand		
			CB				
mm	HB7010	HB7010	HB7010	HB7010	HB7010	HB7010	
0,5-1,5	XXX	XXX	XXX	–	XXX	–	10
0,5-3	–	XXX	–	–	–	–	10
1,75-3	–	XXX	XXX	–	XXX	–	10
3,5-5	–	–	–	XXX	–	XXX	10
Thickness mm	3.17	3.6	3.6	4.76	3.6	4.76	
Insert size L mm	11	16	16	22	16	22	

DIN 13 6H | M | M-LH | MF | MF-LH | 60°

Garant **Threading inserts, metric internal thread**



Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 67 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	CuZn	Graphite GRP CRP	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	M	M	S	K	N	N						
HB 7010		**250**	**180**	**150**	**150**	**130**	**100**	**90**	40			100	100	50	**130**	150			●			●	○
HB 7020		200	180	160	**160**	**120**	**90**	70	30			90	90	50	**120**	120			○	●	●	●	○
HB 7125												**120**	**120**	**60**					●	●	●	●	
HU 7315	**200**	**100**	**90**											50		**110**			●	●	●	●	

Full profile, internal

Full profile insert 60° for internal threads to DIN / ISO R 262 (DIN 13) tolerance class 6H.
27 0761 – **CB =** Sintered chip breaker.

Pitch	27 0749	27 0750	27 0752	27 0754	27 0756	27 0758	27 0759	27 0763	27 0761	27 0762	
	Full profile insert 60°, internal, right-hand										
									CB		
mm	HB7020	HB7010	HB7010	HB7020	HB7010	HB7020	HB7125	HU7315	HB7010	HB7010	
0,25	XXX	–	–	–	–	–	–	–	–	–	10
0,5	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	–	–	10
0,7	–	–	XXX	–	XXX	–	XXX	XXX	–	–	10
0,75	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	–	–	10
0,8	–	–	XXX	–	XXX	–	XXX	XXX	–	–	10
1	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	–	10
1,25	XXX	XXX	XXX	–	XXX	XXX	XXX	XXX	XXX	–	10
1,5	–	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	–	10
1,75	–	XXX	XXX	–	XXX	XXX	XXX	XXX	XXX	–	10
2	–	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	–	10
2,5	–	–	XXX	XXX	XXX	XXX	XXX	XXX	XXX	–	10
3	–	–	–	–	XXX	XXX	XXX	XXX	XXX	–	10
3,5	–	–	–	–	XXX	XXX	XXX	XXX	XXX	XXX	10
4	–	–	–	–	–	–	–	–	–	XXX	10
4,5	–	–	–	–	–	–	–	–	–	XXX	10
5	–	–	–	–	–	–	–	–	–	XXX	10
6	–	–	–	–	–	–	–	–	–	XXX	10
Thickness mm	1.85	2.42	3.17	3.17	3.6	3.6	3.6	3.6	3.6	4.76	
Insert size L mm	6	9.3	11	11	16	16	16	16	16	22	

Pitch		mm	0,5	0,7	0,75	0,8	1	1,25	1,5	1,75	2	2,5	3		Thickness mm	Insert size L mm
27 0772	Full profile insert 60°, internal, left-hand	HB7010	XXX	XXX	XXX	XXX	XXX	–	XXX	–	XXX	XXX	–	10	3.17	11
27 0776		HB7010	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	10	3.6	16

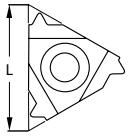
Partial profile, internal

Partial profile insert 60° for internal threads.

Pitch	27 0789	27 0790	27 0791	27 0792	27 0794	27 0796	27 0797	
	Partial profile insert 60°, internal, right-hand					Partial profile insert 60°, internal, left-hand		
mm	HB7020	HB7010	HB7010	HB7010	HB7010	HB7010	HB7010	
0,5-1,25	XXX	–	–	–	–	–	–	10
0,5-3	–	–	–	XXX	–	–	XXX	10
0,5-1,5	–	XXX	XXX	XXX	–	XXX	XXX	10
1,75-3	–	–	–	XXX	–	–	XXX	10
3,5-5	–	–	–	–	XXX	–	–	10
Thickness mm	1.85	2.42	3.17	3.6	4.76	3.17	3.6	
Insert size L mm	6	9.3	11	16	22	11	16	

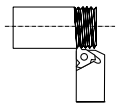
BSP | BSP-LH | BSW | BSW-LH | G | G-LH | 55°

Threading inserts, imperial thread



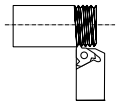
Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 67 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	CuZn	Graphite GRP CRP	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	M	M	S	K	N	N						
HB7010		250	180	150	150	130	100	90	40			100	100	50	130	150			●			●	○
HB7020		200	180	160	160	120	90	70	30			90	90	50	120	120			○	●	●	●	○
HB7125												120	120	60					●	●	●	●	
HU7315	200	100	90											50		110			●	●	●	●	

Full profile, external



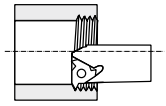
TPI		27 0799	27 0800	27 0802	27 0803	27 0804	27 0805	
		Full profile insert 55°, external, right-hand					Full profile insert 55°, external, left-hand	
		HB7010	HB7010	HB7020	HB7125	HU7315	HB7010	
28		XXX	XXX	XXX	XXX	XXX	XXX	10
19		XXX	XXX	XXX	XXX	XXX	XXX	10
14		XXX	XXX	XXX	XXX	XXX	XXX	10
11		–	XXX	XXX	XXX	XXX	XXX	10
Thickness	mm	3.17	3.6	3.6	3.6	3.6	3.6	
Insert size L	mm	11	16	16	16	16	16	

Partial profile, external



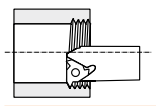
TPI		27 0808	27 0810	27 0812	27 0815	
		Partial profile insert 55°, external, right-hand			Partial profile insert 55°, external, left-hand	
		HB7010	HB7010	HB7010	HB7010	
48-16		XXX	XXX	–	XXX	10
48-8		–	XXX	–	XXX	10
14-8		–	XXX	–	XXX	10
7-5		–	–	XXX	–	10
Thickness	mm	3.17	3.6	4.76	3.6	
Insert size L	mm	11	16	22	16	

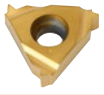
Full profile, internal



TPI		27 0819	27 0820	27 0822	27 0824	27 0826	27 0827	27 0828	27 0834	
		Full profile insert 55°, internal, right-hand							Full profile insert 55°, internal, left-hand	
		HB7020	HB7010	HB7010	HB7010	HB7020	HB7125	HU7315	HB7010	
28		–	XXX	XXX	XXX	XXX	XXX	XXX	XXX	10
19		XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	10
14		–	–	XXX	XXX	XXX	XXX	XXX	XXX	10
11		–	–	–	XXX	XXX	XXX	XXX	XXX	10
Thickness	mm	1.85	2.42	3.17	3.6	3.6	3.6	3.6	3.6	
Insert size L	mm	6	9.3	11	16	16	16	16	16	

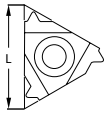
Partial profile, internal





TPI		27 0839	27 0840	27 0841	27 0842	27 0847	
		Partial profile insert 55°, internal, right-hand				Partial profile insert 55°, internal, left-hand	
		HB7020	HB7010	HB7010	HB7010	HB7010	
48-20		XXX	–	–	–	–	10
48-8		–	–	–	XXX	–	10
48-16		–	XXX	XXX	XXX	XXX	10
14-8		–	–	–	XXX	XXX	10
Thickness	mm	1.85	2.42	3.17	3.6	3.6	
Insert size L	mm	6	9.3	11	16	16	

Garant Threading inserts, trapezoidal threads / UN threads / NPT threads



Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 67 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	CuZn	Graphite GRP CRP	Uni
ISO code	N	N	N	P	P	P	P	P	H	H	H	M	M	S	K	N	N	
27 0850–27 0940		250	180	150	150	130	100	90	40			100	100	50	130	150		

Trapezoidal thread semi-profile

DIN 103 7e | DIN 103 7H | TR | TR-LH

30°

Pitch mm	27 0850	27 0853	27 0855	27 0858	27 0870	27 0873	27 0884	
	Semi-profile insert 30°, external, right-hand		Semi-profile insert 30°, external, left-hand		Semi-profile insert 30°, internal, right-hand		Semi-profile insert 30°, internal, left-hand	
	HB7010	HB7010	HB7010	HB7010	HB7010	HB7010	HB7010	
2	XXX	–	XXX	–	XXX	–	XXX	10
3	XXX	–	XXX	–	XXX	–	XXX	10
4	–	XXX	–	XXX	–	XXX	–	10
5	–	XXX	–	XXX	–	XXX	–	10
6	–	XXX	–	XXX	–	XXX	–	10
Thickness mm	3.6	4.76	3.6	4.76	3.6	4.76	3.6	
Insert size L mm	16	22	16	22	16	22	16	

UN threads full profile

UN | UNC | UNF | UNEF | UNS | UN-LH | UNC-LH | UNF-LH | UNEF-LH | UNS-LH

60°

TPI	27 0900	27 0905	27 0910	27 0913	27 0915	
	Full profile insert 60°, external, right-hand	Full profile insert 60°, external, left-hand	Full profile insert 60°, internal, right-hand		Full profile insert 60°, internal, left-hand	
	HB7010	HB7010	HB7010	HB7010	HB7010	
20	XXX	XXX	XXX	XXX	XXX	10
18	XXX	XXX	XXX	XXX	XXX	10
16	XXX	XXX	XXX	XXX	XXX	10
14	XXX	XXX	XXX	XXX	XXX	10
12	XXX	XXX	–	XXX	XXX	10
8	XXX	XXX	–	XXX	XXX	10
Thickness mm	3.6	3.6	3.17	3.6	3.6	
Insert size L mm	16	16	11	16	16	

NPT threads

NPT | 60°

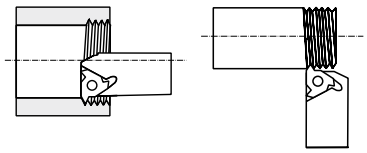
TPI	27 0930	27 0935	27 0940	
	Full profile insert 60°, external, right-hand	Full profile insert 60°, internal, right-hand		
	HB7010	HB7010	HB7010	
18	XXX	XXX	–	10
14	XXX	XXX	XXX	10
11,5	XXX	–	XXX	10
8	XXX	–	XXX	10
Thickness mm	3.6	3.17	3.6	
Insert size L mm	16	11	16	

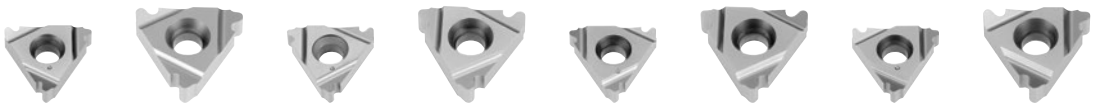
RD | RD-LH | DIN 405 | 30°

Garant Threading inserts for round threads

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 67 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	CuZn	Graphite GRP CRP	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	M	M	S	K	N	N						
27 0960–27 0994												120	120	60					●	●	●	●	

DIN 405 round thread





TPI	2U 27 0960	2U 27 0964	2U 27 0970	2U 27 0974	2U 27 0980	2U 27 0984	2U 27 0990	2U 27 0994	
	Full profile insert 30°, external, right-hand		Full profile insert 30°, external, left-hand		Full profile insert 30°, internal, right-hand		Full profile insert 30°, internal, left-hand		
	HB7125	HB7125	HB7125	HB7125	HB7125	HB7125	HB7125	HB7125	
10	XXX	–	XXX	–	XXX	–	XXX	–	10
8	XXX	–	XXX	–	XXX	–	XXX	–	10
6	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	10
4	–	XXX	–	XXX	–	XXX	–	XXX	10
Thickness mm	3.6	4.76	3.6	4.76	3.6	4.76	3.6	4.76	
Insert size L mm	16	22	16	22	16	22	16	22	

M | M-LH | MF | G | BSW | BSW-LH | G-LH | MF-LH

Garant Threading insert sets, external / internal

Type			ER	IR	EL	IL
2U 27 1900	Threading insert set size 16	HB7010	XXX	XXX	XXX	XXX
Machining direction			right-hand	right-hand	left-hand	left-hand
Content: Full profile, metric 60°			No. 270700 size 1; 1.25; 1.5; 2; 2.5; 3	No. 270756 size 1; 1.5; 1.75; 2; 2.5; 3	No. 270720 size 1; 1.25; 1.5; 2; 2.5; 3	No. 270776 size 1; 1.5; 1.75; 2; 2.5; 3
Partial profile, metric 60°			No. 270740 size 0.5-1.5; 1.75-3	No. 270792 size 0.5-1.5; 1.75-3	No. 270745 size 0.5-1.5; 1.75-3	No. 270797 size 0.5-1.5; 1.75-3
Full profile, BSW 55°			No. 270800 size 14; 11	No. 270824 size 14; 11	No. 270805 size 14; 11	No. 270834 size 14; 11

TOOL Scout

- Quick application-related tool selection.
- Direct ordering in the eShop.
- Tool selection not restricted to specific standards or manufacturers.
- Cutting data - direct selection.
- Tool information for reliable engineering.

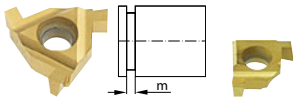
You can find optimum cutting data, machining strategy and NC programs for your machine programming in the ThreadScout.

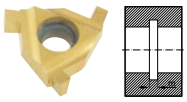
Garant Profile turning inserts external / internal

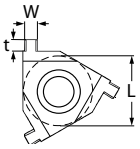
Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 67 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	CuZn	Graphite GRP CRP	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	M	M	S	K	N	N						
27 1005–27 1940		250	180	150	150	130	100	90	40			100	100	50	130	150			●			●	○

Profile turning inserts for DIN 471/472

DIN 471 | DIN 472



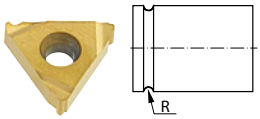


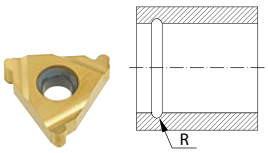


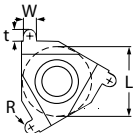
Width groove m (H13) mm	21J 27 1005 Partial profile insert for DIN 471, external, right-hand	21J 27 1010 Partial profile insert for DIN 472 internal, right-hand	21J 27 1015 Partial profile insert for DIN 472 internal, right-hand		w mm	t_{max} 27 1005 27 1015 mm	t_{max} 27 1010 mm	for circlips to DIN 471 / 472 ring thickness mm
0,5	XXX	XXX	–	10	0.59	1.3	0.7	0.4
0,7	XXX	XXX	–	10	0.79	1.3	0.7	0.6
0,8	XXX	XXX	–	10	0.89	1.3	0.7	0.7
0,9	XXX	XXX	XXX	10	0.99	1.3	0.7	0.8
1,1	XXX	XXX	XXX	10	1.19	1.3	1	1
1,3	XXX	XXX	XXX	10	1.39	1.5	1.5	1.2
1,6	XXX	–	XXX	10	1.69	1.8	–	1.5
1,85	XXX	–	XXX	10	1.94	2	–	1.75
2,15	XXX	–	XXX	10	2.24	2	–	2
2,65	XXX	–	XXX	10	2.74	2	–	2.5
Grade	HB7010	HB7010	HB7010					
Thickness mm	3.6	2.42	3.6					
Insert size L mm	16	9.3	16					
Shim	272604_S	–	272624_S					

Profile turning inserts for DIN 7993

DIN 7993







Groove R mm	21J 27 1025 Partial profile insert for DIN 7993, external, right-hand	21J 27 1035 Partial profile insert for DIN 7993 internal, right-hand		Groove R mm	w mm	t_{max} mm
0,4	XXX	–	10	0.4	0.8	0.6
0,6	XXX	XXX	10	0.6	1.2	0.8
0,9	XXX	–	10	0.9	1.8	1.1
1	XXX	XXX	10	1	2	1.2
Grade	HB7010	HB7010				
Thickness mm	3.6	3.6				
Insert size L mm	16	16				
Shim	272604_S	272624_S				

Profile turning insert sets

DIN 471 | DIN 472

Type			ER/IR
21J 27 1920	Partial profile insert set size 16 for circlips, right-hand	HB7010	XXX
Machining direction			right-hand
Content: Partial profile, DIN 471 and DIN 472			No. 271005 and 271015 size 1.1; 1.3; 1.6; 1.85
Shim			No. 272604 and 272624 size S

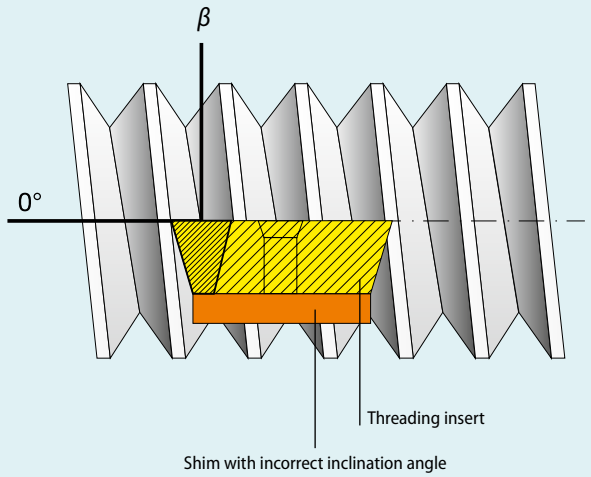
Type			ER/IR
21J 27 1940	Partial profile insert set size 16 for round section snap rings, right-hand	HB7010	XXX
Machining direction			right-hand
Content: Partial profile, DIN 7993			No. 271025 size 0.4; 0.6; 0.9; 1 No. 271035 size 0.6; 0.9; 1
Shim			No. 272604 and 272624 size S

DIN 7993

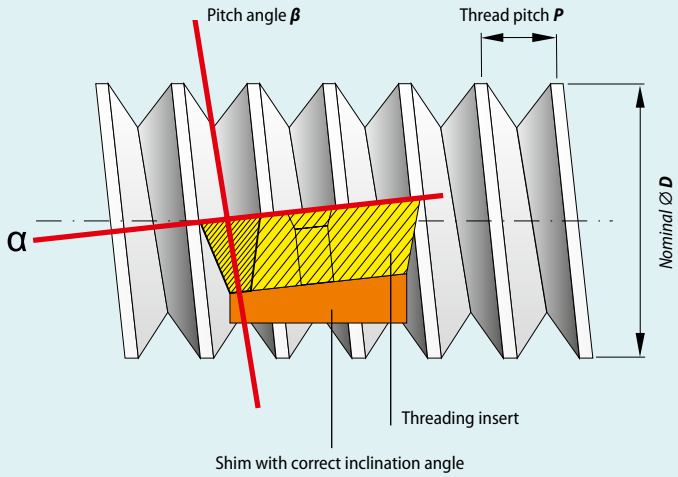
Garant Determining the inclination angle

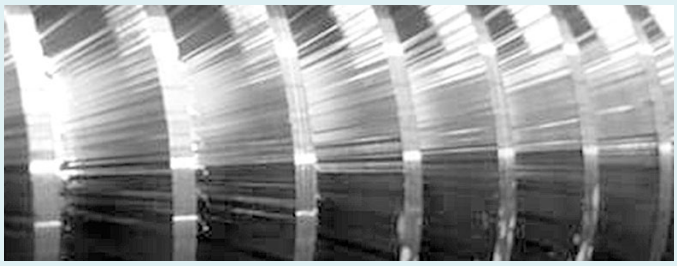
The insert inclination angle α must correspond with the thread pitch angle β as exactly as possible.
Only by this means can maximum profile accuracy and best surface quality be achieved.
At the same time the evenness of the wear increases the working life of the insert.

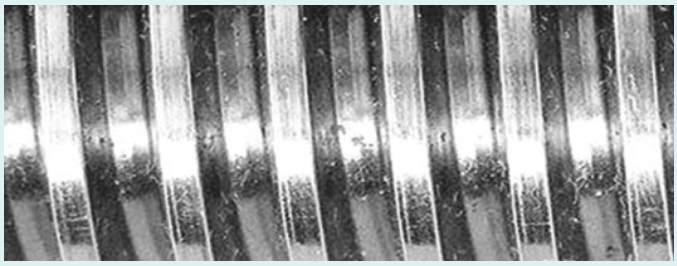
Incorrect



Correct







using the formula

Metric: $\alpha \approx \frac{20 \times P}{D}$

Inch: $\alpha \approx \frac{508}{D \times GpZ}$

Example:
Thread pitch **P = 2**
Nominal ∅ **D = 30 mm**

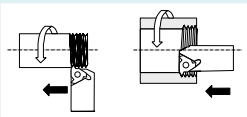
$\alpha \approx \frac{20 \times 2}{30} = 1.33°$

Result:
The suitable shim has a 1.5° inclination.
Machining can be performed using the standard shim.

by graphics

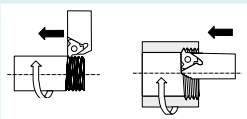
Feed towards chuck

Right-hand thread



(Insert + toolholder, right-hand)

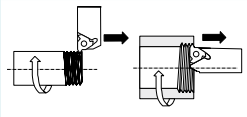
Left-hand thread



(Insert + toolholder, left-hand)

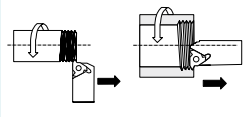
Feed towards tailstock

Right-hand thread

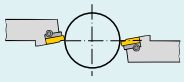


(Insert + toolholder, left-hand)

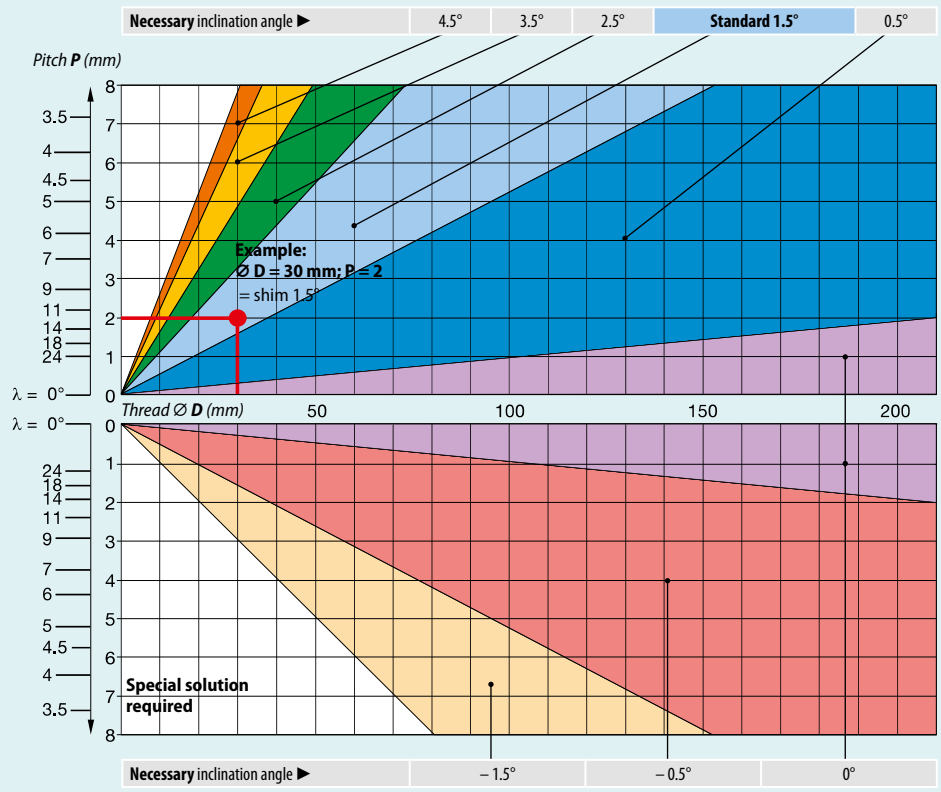
Left-hand thread



(Insert + toolholder, right-hand)



also applies when overhead toolholders are used



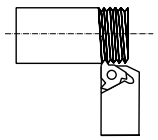
Garant Shims with correction angle

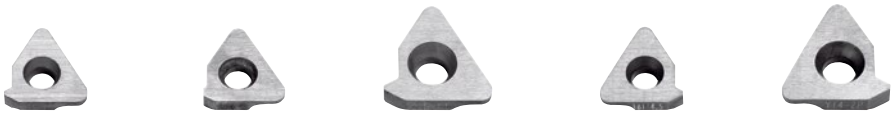
Application: **For production of accurate threads.**
Use in conjunction with threading inserts No. 270700 – 271900.

Note: **Toolholders that have no fixed angle of inclination are supplied as standard with a 1.5° shim.**

For external threads

27 2604 – **Use only in conjunction with profile inserts No. 271005 - 271035.**

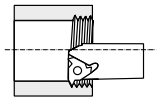




Inclination angle	27 2600	27 2604	27 2606	27 2610	27 2616	Angle as in graph
	Shim for screw-on toolholder					
degrees	right-hand	right-hand profile turning	right-hand	left-hand	left-hand	
-1,5	XXX	–	XXX	XXX	XXX	
-0,5	XXX	–	XXX	XXX	XXX	
0	XXX	–	XXX	XXX	XXX	
0,5	XXX	–	XXX	XXX	XXX	
1,5	XXX	–	XXX	XXX	XXX	
2,5	XXX	–	XXX	XXX	XXX	
3,5	XXX	–	XXX	XXX	XXX	
4,5	XXX	–	XXX	XXX	XXX	
S	–	XXX	–	–	–	–
for circuit board size L mm	16	16	22	16	22	

For internal threads

27 2624 – **Use only in conjunction with profile inserts No. 271005 - 271035.**



Inclination angle	27 2620	27 2624	27 2626	27 2630	Angle as in graph
	Shim for boring bars				
degrees	right-hand	right-hand profile turning	right-hand	left-hand	
-1,5	(XXX)	–	(XXX)	(XXX)	
-0,5	(XXX)	–	(XXX)	(XXX)	
0	(XXX)	–	(XXX)	(XXX)	
0,5	(XXX)	–	(XXX)	(XXX)	
1,5	(XXX)	–	(XXX)	(XXX)	
2,5	(XXX)	–	(XXX)	(XXX)	
3,5	(XXX)	–	(XXX)	(XXX)	
4,5	(XXX)	–	(XXX)	(XXX)	
S	–	XXX	–	–	–
for circuit board size L mm	16	16	22	16	

Shim sets

Type		ER	IR	EL	IL	for insert size L mm
27 2650	Shim set	XXX	XXX	XXX	XXX	16
27 2660		XXX	–	XXX	–	22
Machining direction		right-hand	right-hand	left-hand	left-hand	
Content: 10 pieces (27 2650)		No. 272600 size -1.5; -0.5; 0; 0.5; 2×1.5; 2.5; 3.5; 4.5 No. 272604 size S	No. 272620 size -1.5; -0.5; 0; 0.5; 2×1.5; 2.5; 3.5; 4.5 No. 272624 size S	No. 272610 size -1.5; -0.5; 0; 0.5; 3×1.5; 2.5; 3.5; 4.5	No. 272630 size -1.5; -0.5; 0; 0.5; 3×1.5; 2.5; 3.5; 4.5	
10 pieces (27 2660)		No. 272606 size -1.5; -0.5; 0; 0.5; 3×1.5; 2.5; 3.5; 4.5	—	No. 272616 size -1.5; -0.5; 0; 0.5; 3×1.5; 2.5; 3.5; 4.5	—	

right-hand

left-hand

eco clamping toolholders for threading inserts

With internal coolant feed right to the cutting edge. Cooling by means of precision nozzles effectively and efficiently reduces the thermal loading, since the coolant stream is optimally directed between the chip and cutting edge.
This results in higher productivity, longer tool life and higher process reliability.

Supplied with: **With shim 1.5°.**

Note: Coolant transfer only in conjunction with GARANT eco-system toolholders No. 317900 – 319886.

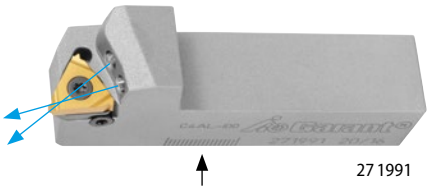
Clamping toolholder with clamp

27 1993

Positioning within the scale ensures accurate coolant transfer.

Shank / insert size	21U 27 1993	21U 27 1994				Shim 1.5°		Shim screw	Clamp, screw, O-ring	
	eco clamping toolholder					27 1993	27 1994		27 1993	27 1994
mm	right-hand	left-hand	mm	mm	mm					
20/16	XXX	XXX	20	30	89	279819 1	279819 2	259026 2	259036 16	259036 15
25/16	XXX	XXX	25	30	101.5	279819 1	279819 2	259026 2	259036 16	259036 15

Screw-on toolholder with screw clamping



27 1991

Positioning within the scale ensures accurate coolant transfer.

Shank / insert size	21U 27 1991	21U 27 1992				Insert screw for threading insert	Shim 1.5°		Clamping screw for shim
	eco screw-on toolholder						27 1991	27 1992	
mm	right-hand	left-hand	mm	mm	mm				
16/16	XXX	XXX	16	27	74	279810 2	272600 1.5	272610 1.5	279824 1
20/16	XXX	XXX	20	30	89	279810 2	272600 1.5	272610 1.5	279824 1
25/16	XXX	XXX	25	30	101.5	279810 2	272600 1.5	272610 1.5	279824 1
25/22	XXX	XXX	25	36	107.5	279810 3	272606 1.5	272616 1.5	279824 2

DIN 4984

Screw-on toolholders for threading inserts

Screw-on toolholder with fixed 1.5° inclination angle

27 1995

Shank size / insert size	21W 27 1995	21W 27 1996				Insert screw for threading insert
	Screw-on toolholder with fixed 1.5° inclination angle					
mm	right-hand	left-hand	mm	mm	mm	
8/11	XXX	XXX	8	17.5	136.4	279810 4
10/11	XXX	XXX	10	17.5	125	279810 4
12/11	XXX	XXX	12	17.5	125	279810 4
16/11	XXX	XXX	16	20	100	279810 4
20/11	XXX	XXX	20	30	130	279810 4
25/11	XXX	XXX	25	30	152	279810 4

Screw-on toolholder with shim

Supplied with: **With shim 1.5°.**

27 2001

Shank / insert size	21W 27 2001	21W 27 2002				Insert screw for threading insert	Shim 1.5°		Clamping screw for shim
	Screw-on toolholder						27 2001	27 2002	
mm	right-hand	left-hand	mm	mm	mm				
12/16	XXX	XXX	16	22	83	279810 2	272600 1.5	272610 1.5	279824 1
16/16	XXX	XXX	16	20	97	279810 2	272600 1.5	272610 1.5	279824 1
20/16	XXX	XXX	20	30	128	279810 2	272600 1.5	272610 1.5	279824 1
25/16	XXX	XXX	25	30	153	279810 2	272600 1.5	272610 1.5	279824 1
32/16	XXX	XXX	32	30	173	279810 2	272600 1.5	272610 1.5	279824 1
25/22	XXX	XXX	25	36	155	279810 3	272606 1.5	272616 1.5	279824 2
32/22	XXX	XXX	32	36	175	279810 3	272606 1.5	272616 1.5	279824 2

Garant® Boring bars for threading inserts

With fixed inclination angle.

27 2101 Size 26/6 – **Solid carbide** shank.

27 2111/2121/2142 – **With internal cooling.**

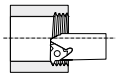
27 2101 Size 26/6; 2101 Size 32/16 – **With internal cooling.**

Application:

27 2121 – For coarse threads M16×2 and M18×2.5.

27 2101/2111 Size 32/16 – For coarse threads M20×2.5; M22×2.5 and M24×3.

Note:
27 2101 Size 44/9,3 – Overhang adjustable from 8 – 44 mm.



Right-hand boring bar

27 2101_22/9.3

l_2 *adjustable from 8 – 44 mm*

27 2101_44/9.3

27 2101_32/16

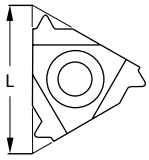
Over-hang / insert size	21W 27 2091	21W 27 2111	21W 27 2101	21W 27 2121	21W 27 2132	21W 27 2142	Cutting point / joint		Ø D_{min}				Insert screw
	Boring bar with fixed 0.5° inclination angle	Boring bar with fixed 1.5° inclination angle	Boring bar with fixed 2.5° inclination angle	Boring bar with fixed 3° inclination angle	Boring bar with fixed 0.5° inclination angle	Boring bar with fixed 1.5° inclination angle	27 2091 27 2101 27 2132	27 2111 27 2121 27 2142			27 2091 27 2101 27 2132	27 2111 27 2121 27 2142	
mm	right-hand	right-hand	right-hand	right-hand	left-hand	left-hand	mm	mm	mm	mm	mm	mm	
12/6	–	–	XXX	–	–	–	12	–	6.35	–	100	–	279810 6
26/6	–	–	XXX	–	–	–	6	–	6.35	–	100	–	279810 6
22/9,3	–	–	XXX	–	–	–	10	–	8	–	87	–	279810 7
31/9,3	–	–	XXX	–	–	–	10	–	8	–	97	–	279810 7
43/9,3	–	–	XXX	–	–	–	10	–	8	–	109	–	279810 7
44/9,3	–	–	XXX	–	–	–	16	–	8	–	100	–	279810 7
25/11	XXX	XXX	–	XXX	XXX	XXX	12	20	13	7.3	100	180	279810 4
32/11	XXX	–	–	–	XXX	–	16	–	16	8.9	100	–	279810 4
60/11	–	XXX	–	–	–	–	–	10	13	7.3	–	100	279810 4
32/16	–	XXX	XXX	–	–	XXX	20	20	17	10.3	180	180	279810 5
40/16	–	XXX	–	–	–	XXX	–	20	20	11.5	–	180	279810 5
100/16	–	XXX	–	–	–	–	–	16	20	11.3	–	150	279810 5

Supplied with: **With shim 1.5°.**

27 2171

Overhang / insert size	21W 27 2171	21W 27 2172	Cutting point / joint	Ø D_{min}			Insert screw	Shim 1.5°		Shim screw
	Boring bar							27 2171	27 2172	
mm	right-hand	left-hand	mm	mm	mm	mm				
45/16	XXX	XXX	25	29	16.1	200	279810 2	272620 1.5	272630 1.5	279824 1
60/16	XXX	XXX	32	29	16.3	250	279810 2	272620 1.5	272630 1.5	279824 1
120/16	XXX	XXX	20	24	13.4	180	279810 2	272620 1.5	272630 1.5	279824 1
135/22	XXX	–	25	32	17.2	200	279810 3	272626 1.5	–	279824 2
170/22	XXX	–	32	39	21.5	250	279810 3	272626 1.5	–	279824 2

HOLEX Threading inserts



Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 67 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	CuZn	Graphite GRP CRP	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	M	M	S	K	N	N						
27 0736–27 0817		220	150	130	130	110	85	75	35			85	85	40	110	130			●			●	○

Metric thread

DIN 13 6H | M | MF | 60°

Pitch		mm	1	1,5	2	2,5	3		Thick-nessmm	Insert size L mm
22B 27 0736	Full profile insert 60°, external, right-hand	HBX820	XXX	XXX	XXX	XXX	XXX	10	3.6	16
22B 27 0784	Full profile insert 60°, internal, right-hand	HBX820	XXX	XXX	XXX	XXX	XXX	10	3.6	16

27 0736

Pitch		mm	0,5-3		Thick-nessmm	Insert size L mm
22B 27 0748	Partial profile insert 60°, external, right-hand	HBX820	XXX	10	3.6	16
22B 27 0798	Partial profile insert 60°, internal, right-hand	HBX820	XXX	10	3.6	16

27 0748

Imperial thread

BSP | BSW | G | 55°

TPI		mm	14	11		Thickness mm	Insert size L mm
22B 27 0807	Full profile insert 55°, external, right-hand	HBX820	XXX	XXX	10	3.6	16
22B 27 0817	Full profile insert 55°, internal, right-hand	HBX820	XXX	XXX	10	3.6	16

27 0807

DIN 4984

HOLEX Screw-on toolholders for threading inserts

External grooving

Supplied with: With shim 1.5°.

27 2015

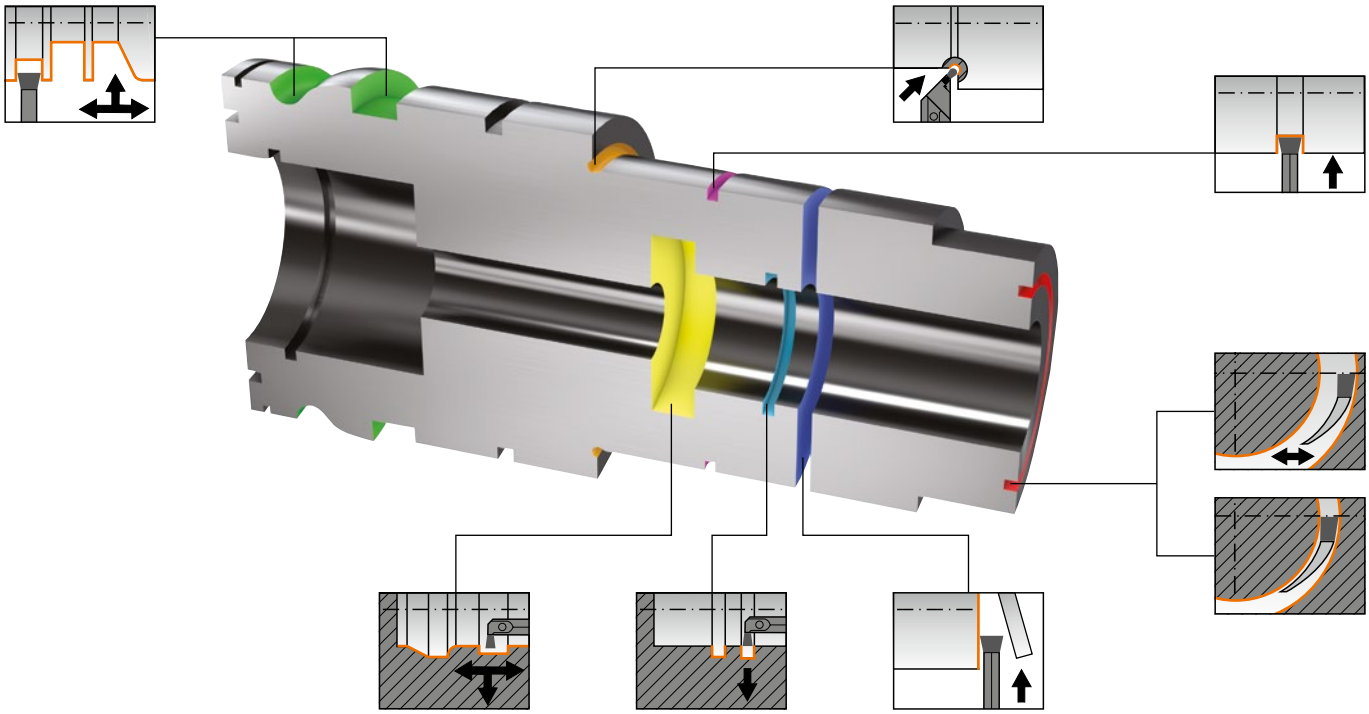
Shank / insert size	22B 27 2015 Screw-on toolholder				Spare parts set
mm	right-hand	mm	mm	mm	
16/16	XXX	16	22	125	2799811
20/16	XXX	20	22	125	2799811
25/16	XXX	25	27	150	2799811

Internal grooving

With fixed 1.5° inclination angle.

27 2185

Shank ∅ / insert size	22B 27 2185 Boring bar				Spare parts set
mm	right-hand	∅ D_{min} mm	mm	mm	
16/16	XXX	20	10.25	150	2799812
20/16	XXX	25	13.3	180	2799812
25/16	XXX	30	16.3	200	2799812



Application	Parting off			Grooving				External grooving		
Colour code				external			internal			
Version	Steel HSS heavy duty	Steel	Steel reinforced	VARIO-LINE modular	eco modular	Grooving toolholder mono	Boring bar	Grooving toolholder 45°	Threading toolholder profile inserts	Clamping toolholder triangular inserts
Suitable insert										
Number of cutting edges / insert	1	2	2	2	2	2	2	2	3	3
eco-variant	●	●	●	●	●	●	●		●	
DIN 471 / DIN 472									●	●
Page(s)	734 – 736	737 – 738	738	739	744, 751 – 753	740 – 743	744	743	730 – 731	748

Application	Internal grooving				Axial grooving				Face grooving
Colour code									
Version	Threading toolholder profile inserts	Boring bar triangular inserts	mini-boring bar interchangeable cutter	micro-toolholder cut-off inserts	medium / heavy duty	Boring bar interchangeable cutter	Carbide deep grooving	micro-toolholder cut-off inserts	modular
Suitable insert									
Number of cutting edges / insert	3	3	1	2	1	1	1	2	2
eco-variant	●		●	●		●	●	●	●
DIN 471 / DIN 472	●	●	●						
Page(s)	731	748	716 – 717	718 – 720	754 – 756	749 – 750	749	718 – 719	751 – 753

eco parting-off tools for parting-off inserts No. 273100 – 273350

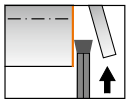
With eco cooling directly to the cutting edge and additional rake face cooling.
27 3564 – With coolant transfer for toolholders from other manufacturers.

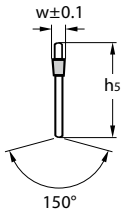
Suitable for:
Size 19/2,2; 19/3,1 – Toolholder No. 319132 – 319133 (VDI toolholder).
Size 26/2,2–32/5,1 – Toolholder No. 273893 – 273894 or No. 319132 – 319133 (VDI toolholder).

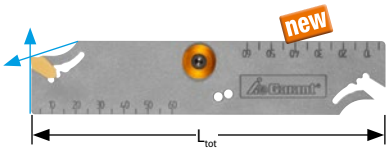
Application: For deep grooves and parting off large diameters.

Spare part: Blanking screw No. 279828 2.
Blanking plate No. 279830 1.

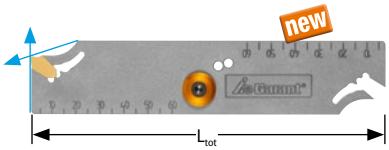
Attention: Please order the assembly key No. 279940 1 separately.







27 3562



27 3564

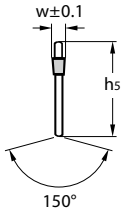
Blade height h_5 / groove width w	21U 27 3562	21U 27 3564	for maximum workpiece ∅	Overall length L_{tot}
	eco parting-off tool			
mm			mm	mm
19/2,2	XXX	XXX	40	86
19/3,1	XXX	XXX	45	86
26/2,2	XXX	XXX	50	110
26/3,1	XXX	XXX	75	110
26/4,1	XXX	XXX	80	110
32/2,2	XXX	XXX	60	150
32/3,1	XXX	XXX	100	150
32/4,1	XXX	XXX	110	150
32/5,1	XXX	XXX	120	150

Parting-off tools for parting-off inserts No. 273100 – 273350

27 3558 – From blade height 100 mm with four insert seats!

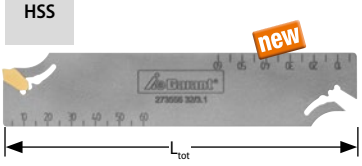
Suitable for: Toolholder No. 273984 – 274000 or No. 319132; 319133 (VDI toolholder).

Supplied with:
27 3551 – Supplied with key No. 279850 1 for changing inserts.
27 3556/3558 – Not including key No. 279940 - please order separately!

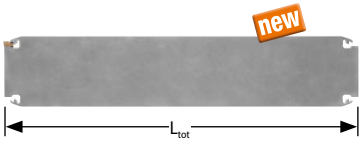


27 3551

HSS



27 3556



27 3558

Blade height h_5 / groove width w	21W 27 3551	21U 27 3556	21U 27 3558	for maximum workpiece ∅	Overall length L_{tot}
	Parting-off tool				
mm	Steel	HSS	Heavy Duty	mm	mm
19/1,5	–	XXX	–	32	86
19/2,2	XXX	XXX	–	40	86
19/3,1	XXX	XXX	–	45	86
26/2,2	XXX	XXX	–	50	110
26/3,1	XXX	XXX	–	75	110
26/4,1	XXX	XXX	–	80	110
26/5,1	XXX	–	–	100	110
32/2,2	XXX	XXX	–	60	150
32/3,1	XXX	XXX	–	100	150
32/4,1	XXX	XXX	–	110	150
32/5,1	XXX	XXX	–	120	150
45/3,1	–	–	XXX	150	225
45/4,1	–	–	XXX	160	225
45/5,1	–	–	XXX	170	225
45/6,0	–	–	XXX	180	225
60/3,1	–	–	XXX	180	230
60/4,1	–	–	XXX	190	230
60/5,1	–	–	XXX	200	230
60/6,0	–	–	XXX	210	230
60/8,0	–	–	XXX	220	230
100/5,1	–	–	XXX	300	500
100/6,0	–	–	XXX	400	500
100/8,0	–	–	XXX	500	500
100/8,0L	–	–	XXX	1000	760

Assembly key for parting-off tools

Suitable for: Parting-off tools No. 273556 – 273558 and No. 273562 – 273564.
Tool holders No. 274010 – 274090.

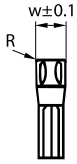
27 9940

Type		1	2
29Y 27 9940	Assembly key	XXX	XXX
for groove width w	mm	1.5 – 6	8

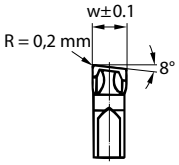
Garant Parting-off inserts for parting-off tools No. 273551 – 273558

27 3190/3294 – With protective chamfer. For increased metal removal rate, higher-tensile steels and interrupted cutting (feed rates increased by 10 %).

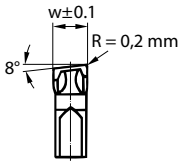
Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 67 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	CuZn	Graphite GRP CRP	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	M	M	S	K	N	N						
HB7035				140	120	100	80	50							80				●	●	●	●	
HB7130												110	90	40					●	○		●	
HB7135	200	200	200									130	110						●	○		●	
HU7310	300	300	230																●	○		●	○
HB9140				130	110	90	70	40				120	100						●	○		●	
HU9215				110	100	80	70								100				●	○		●	
HU9310	380	360	280																●	○		●	
CU7033				120	120	100	80	40											●				●



Neutral



Left-hand



Right-hand

27 3310

27 3150

27 3200

27 3190

27 3294

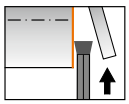
27 3296

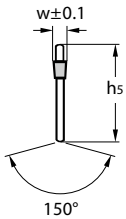
Groove width w			mm	1,5	2,2	3,1	4,1	5,1	6,0	8,0		●
2U 27 3300	Parting-off insert **neutral**		CU7033	–	XXX	XXX	XXX	–	–	–	10	P
2U 27 3100			HB7035	XXX	XXX	XXX	XXX	XXX	XXX	XXX	10	P
2H 27 3190			HB7035	–	–	–	–	–	XXX	XXX	10	P
2U 27 3115			HB7130	–	XXX	XXX	XXX	XXX	–	–	10	M
2H 27 3292			HB9140	XXX	–	–	–	–	XXX	XXX	10	M
2H 27 3294			HB9140	–	–	–	–	–	XXX	XXX	10	M
2H 27 3296			HU9215	–	–	–	–	–	XXX	XXX	10	K
2H 27 3298			HU9310	XXX	–	–	–	–	XXX	XXX	10	N
2U 27 3310			HU7310	–	XXX	XXX	–	–	–	–	10	N
2U 27 3350	Parting-off insert **right-hand**		CU7033	–	XXX	XXX	–	–	–	–	10	P
2U 27 3150			HB7035	–	XXX	XXX	XXX	XXX	–	–	10	P
2U 27 3160			HB7135	–	XXX	XXX	XXX	–	–	–	10	M
2U 27 3180			HU7310	–	XXX	XXX	–	–	–	–	10	N
2U 27 3200	Parting-off insert **left-hand**		HB7035	–	XXX	XXX	XXX	XXX	–	–	10	P
2U 27 3210			HB7135	–	XXX	XXX	–	–	–	–	10	M
Corner radius			mm	0.15	0.2	0.2	0.2	0.2	0.3	0.8		
Feed f in steel < 900 N/mm²			mm/rev.	0.04	0.07	0.1	0.12	0.15	0.17	0.19		

HSS

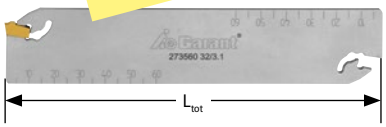
Garant Parting-off tool for parting-off inserts No. 218460 – 218470

Suitable for: Toolholder No. 273984 – 273994 or No. 319132 / 319133 (VDI toolholder).
Attention: Please order the assembly key No. 279940 1 separately.





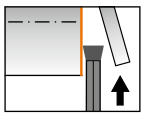
Solid carbide inserts see page 600

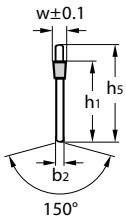


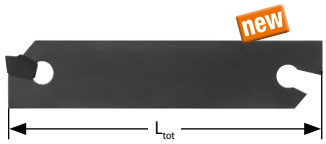
Blade height h_5 / groove width w			mm	19/2,2	19/3,1	26/2,2	26/3,1	32/2,2	32/3,1
2U 27 3560	HSS parting off tool	**neutral**		XXX	XXX	XXX	XXX	XXX	XXX
for maximum workpiece ∅			mm	40	40	50	75	50	100
Overall length L_{tot}			mm	86	86	110	110	150	150

HOLEX Parting-off tool for parting off-inserts No. 273010

Suitable for: Toolholder No. 273020 or No. 319132; 319133 (VDI toolholder).
Supplied with: Including key for changing inserts.



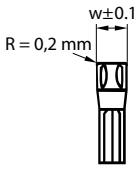




27 3000

Blade height h_5 / groove width w	mm	19/2,2	19/3,1	26/2,2	26/3,1	32/2,2	32/3,1
22B **27 3000** Steel parting-off tool		XXX	XXX	XXX	XXX	XXX	XXX
for maximum workpiece ∅	mm	40	40	75	75	100	100
Width b_2	mm	1.6	2.4	1.6	2.4	1.6	2.4
Height h_1	mm	15.5	15.4	21.2	21.1	24.8	24.7
Overall length L_{tot}	mm	86	86	110	110	150	150

HOLEX Parting-off inserts for parting-off tools No. 273000



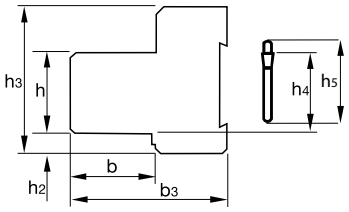
Neutral

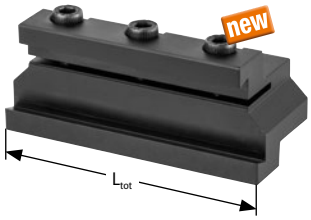
27 3010

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 67 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	CuZn	Graphite GRP CRP	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	M	M	S	K	N	N		●				●
27 3010				**120**	**100**	**90**	**80**					**80**	**60**		**80**								

Groove width w		mm	2,2	3,1	
22D **27 3010**	Parting-off insert **neutral**	**HBX25**	XXX	XXX	**10**
Feed f in steel < 900 N/mm²		mm/rev.	0.07	0.1	

HOLEX Toolholders for parting-off tools No. 273000





27 3896

Shank height h	mm	16	20	25	For blade height h_5 mm
22B **27 3896**		XXX	–	–	19
22B **27 3897** Toolholder for parting-off tools		–	XXX	XXX	26
22B **27 3898**		–	XXX	XXX	32
h_4	mm	16	20	25	
h_2 (27 3896, 27 3897)	mm	4	8	8	
h_2 (27 3898)	mm	–	13	8	
h_3 (27 3896, 27 3897)	mm	32	38	43	
h_3 (27 3898)	mm	–	48	48	
b	mm		20		
b_3	mm		36		
Overall length L_{tot} (27 3896, 27 3897)	mm	80	90	100	
Overall length L_{tot} (27 3898)	mm	–	100	100	

Garant® Parting-off tool for parting-off inserts No. 273656 – 273749

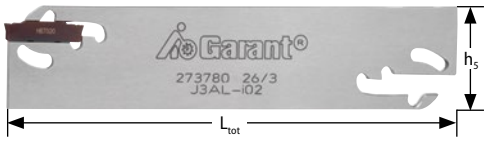
Suitable for:

27 3780 – Toolholder No. 273984 – 273994 or 319132 – 319133 (VDI toolholder).

Note:

27 3780 – Please order the assembly key No. 279920 separately.
From 19.5 mm groove depth (up to groove width 3 mm) and from 24.5 mm groove depth (from groove width 4 mm) the second cutter comes into contact with the workpiece. This can lead to scoring.
If necessary, use single-ended grooving inserts No. 273656 – 273670.

Size 19/1,5–19/3 – Set consisting of 2 blades each with its own seating.



27 3780_19/1,5 – 19/3

Blade height h_5 / groove width w		mm	19/1,5	19/2	19/3	26/2	26/3	32/2	32/3	32/4	32/5	32/6
21W 27 3780	Parting-off tool		XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
for maximum workpiece ∅		mm	40	40	40	60	85	60	110	110	110	110
Overall length L_{tot}		mm	96	96	96	120	120	150	150	150	150	150

29Y 27 9920	Assembly key	XXX

27 9920

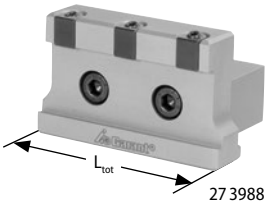
Garant® Toolholder for parting-off tools, with removable shank

27 3986/3990 – Long version for high stability.

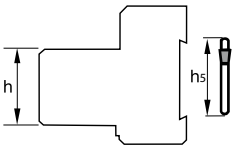
Application: Allows grooving tools of different makes to be used.
Can be used even on toolholders with concealed clamping elements.

Note: Additional dimensional data can be found in our e-shop at https://www.hoffmann-group.com.

Shank height h		mm	12	16	20	25	For blade height h_5 mm	Clamping claw	Clamping screw
21W 27 3984	Parting-off toolholder with removable shank		XXX	XXX	–	–	19	279840 2	279815 14
21W 27 3986			–	–	XXX	XXX	26	279840 2	279815 14
21W 27 3988			–	–	XXX	XXX	26	279840 2	279815 14
21W 27 3990			–	–	XXX	XXX	32	279840 2	279815 14
21W 27 3992			–	–	XXX	XXX	32	279840 2	279815 14
Overall length L_{tot} (27 3984, 27 3986, 27 3990)		mm	61	61	110	110			
Overall length L_{tot} (27 3988, 27 3992)		mm	–	–	90	90			



27 3988



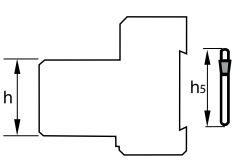
Garant® Base holder with removable bench clamp

Higher clamping forces dues to larger clamping screws in the clamping strip.

Application: Allows grooving tools of different makes to be used.
Can be used even on toolholders with concealed clamping elements.

Note: Additional dimensional data can be found in our e-shop at https://www.hoffmann-group.com.

Shank height h		mm	20	25	32	40	50	For blade height h_5 mm	Clamping strip	Clamping screw
21U 27 3993	Base holder with removable bench clamp		XXX	XXX	–	–	–	26	279928 1	279929 1
21U 27 3994			XXX	XXX	XXX	–	–	32	279928 2	279929 1
21U 27 3996			XXX	XXX	XXX	XXX	–	45	279928 3	279929 2
21U 27 3998			–	XXX	XXX	XXX	XXX	60	279928 3	279929 2
21U 27 4000			–	–	–	XXX	XXX	100	279928 3	279929 2
Overall length L_{tot} (27 3993, 27 4000)		mm	87	87	–	250	250			
Overall length L_{tot} (27 3994)		mm	100	100	100	–	–			
Overall length L_{tot} (27 3996, 27 3998)		mm			120					



eco grooving tools, strengthened

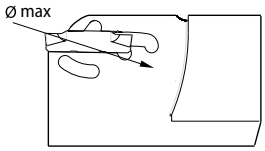
With eco cooling directly to the cutting edge and additional rake face cooling.
27 3854/3855 – With coolant transfer for toolholders from other manufacturers.

Suitable for:
27 3864 – Toolholders No. 273893 – 273894; 319133 20/50.
Size 26/3; 26/3L – 319140– 319141 size RR or LR.
27 3865 – Toolholders No. 273893 – 273894; 319132 20/50.
Size 26/3; 26/3L – 319140– 319141 size RL or LL.

Attention: Please order the assembly key No. 279920 separately.

27 3864_26/3

27 3864_26/3



Blade height h_5 / groove width w		mm	26/3	26/3L	32/3	32/3L
21W 27 3864	eco grooving tool strengthened	right-hand	XXX	XXX	XXX	XXX
21W 27 3865		left-hand	XXX	XXX	XXX	XXX
21W 27 3854		right-hand	XXX	XXX	XXX	XXX
21W 27 3855		left-hand	XXX	XXX	XXX	XXX
for maximum workpiece Ø		mm	65	90	65	90
Height h_1		mm	21.4	21.4	25	25
Overall length L_{tot} (27 3864, 27 3865)		mm	97	109.5	109.5	122
Overall length L_{tot} (27 3854, 27 3855)		mm	83.5	96	87.5	100

eco grooving tools

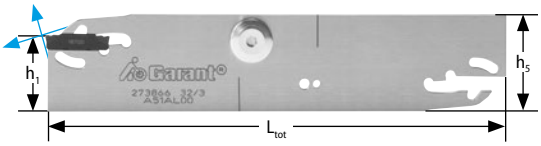
With eco cooling directly to the cutting edge and additional rake face cooling.
27 3856 – With coolant transfer for toolholders from other manufacturers.

Suitable for:
Size 19/2; 19/3 – Toolholder No. 319132 – 319133 (VDI toolholder).
Size 26/2–32/6 – Toolholder No. 273893 – 273894 or No. 319132 – 319133 (VDI toolholder).

Application: For deep grooves and parting off large diameters.

Spare part: Blanking screw No. 279828 1.

Note: Please order the assembly key No. 279920 separately. From 19.5 mm groove depth (up to groove width 3 mm) and from 24.5 mm groove depth (from groove width 4 mm) the second cutter comes into contact with the workpiece. This can lead to scoring. If necessary, use single-ended grooving inserts No. 273656 – 273670.
Size 19/2; 19/3 – Set consisting of 2 blades each with its own seating.



27 3866

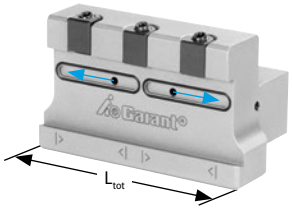
27 3856

27 3866_19/2 – 19/3

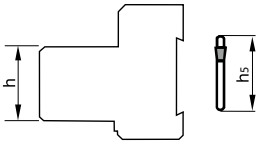
Blade height h_5 / groove width w		mm	19/2	19/3	26/2	26/3	32/2	32/3	32/4	32/5	32/6
21W 27 3866	eco grooving tool		XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
21W 27 3856			–	–	XXX	XXX	XXX	XXX	XXX	XXX	XXX
for maximum workpiece Ø		mm	40	40	60	85	60	110	110	110	110
Height h_1		mm	15.7	15.7	21.4	21.4	25	25	25	25	25
Overall length L_{tot}		mm	96	96	120	120	150	150	150	150	150

eco toolholder for eco grooving tool and eco grooving tool strengthened

Note: Coolant transfer only in conjunction with GARANT eco-system toolholders No. 319001 – 319886.
Additional dimensional data can be found in our e-shop at https://www.hoffmann-group.com.



27 3893



Shank height h		mm	20	25	For blade height h_5 mm	Clamping claw	Clamping screw
21W 27 3893	eco grooving toolholder		XXX	XXX	26	279840 2	279815 14
21W 27 3894			XXX	XXX	32	279840 2	279815 14

eco VARIO-LINE grooving toolholder

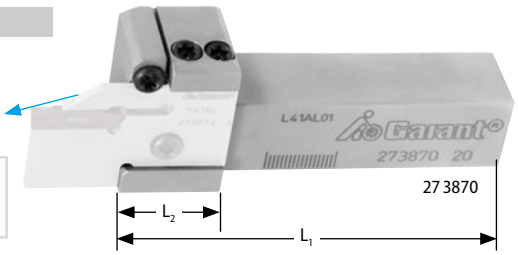
eco VARIO-LINE toolholder, straight – 0°

Suitable for:

27 3870 – eco blade carrier No. 273874.
27 3871 – eco blade carrier No. 273875.

Supplied with: Including assembly screws.

Note: Coolant transfer only in conjunction with GARANT eco-system toolholders No. 317900 – 319886.
$L_{tot} = L_1 + L_3$ (eco blade carriers).



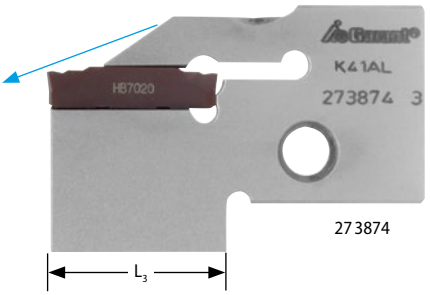
Shank height h	21W 27 3870	21W 27 3871		L_1	L_2	Screw
	eco Vario-line toolholder					
mm	right-hand	left-hand	mm	mm	mm	
16	XXX	XXX	21	78	24.5	279815 9 (TX25; 6.0 Nm)
20	XXX	XXX	25	93.5	24.5	279815 9 (TX25; 6.0 Nm)
25	XXX	XXX	30	95.5	24.5	279815 9 (TX25; 6.0 Nm)

eco VARIO-LINE blade carrier, straight

Suitable for:

27 3874 – eco toolholder No. 273870 or base toolholder No. 319145 RR / LR.
27 3875 – eco toolholder No. 273871 or base toolholder No. 319145 RL / LL.

Groove width w	21W 27 3874	21W 27 3875	t_{max}	L_3
	eco Vario-line blade carrier			
mm	right-hand	left-hand	mm	mm
2	XXX	XXX	21	21.5
3	XXX	XXX	21	21.5
4	XXX	XXX	28	28.5
5	XXX	XXX	28	28.5
6	XXX	XXX	28	28.5



VARIO-LINE grooving toolholder

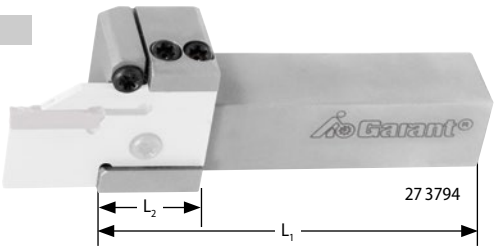
VARIO-LINE toolholder, straight – 0°

Suitable for:

27 3794 – Blade carrier No. 273798.
27 3795 – Blade carrier No. 273799.

Supplied with: Including assembly screws.

Note: $L_{tot} = L_1 + L_3$ (grooving toolholder).



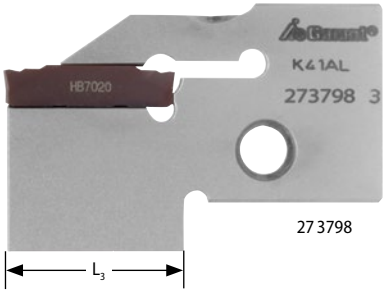
Shank height h	21W 27 3794	21W 27 3795		L_1	L_2	Screw
	Vario-line toolholder					
mm	right-hand	left-hand	mm	mm	mm	
16	XXX	XXX	21	100	24.5	279815 9 (TX25; 6.0 Nm)
20	XXX	XXX	25	125	24.5	279815 9 (TX25; 6.0 Nm)
25	XXX	XXX	30	150	24.5	279815 9 (TX25; 6.0 Nm)
32	XXX	XXX	30	170	24.5	279815 9 (TX25; 6.0 Nm)

VARIO-LINE blade carrier, straight

Application:

27 3798 – Toolholder No. 273794.
27 3799 – Toolholder No. 273795.

Groove width w	21W 27 3798	21W 27 3799	t_{max}	L_3
	Vario-line blade carrier			
mm	right-hand	left-hand	mm	mm
2	XXX	XXX	21	21.5
3	XXX	XXX	21	21.5
4	XXX	XXX	28	28.5
5	XXX	XXX	28	28.5
6	XXX	XXX	28	28.5

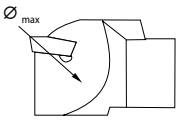


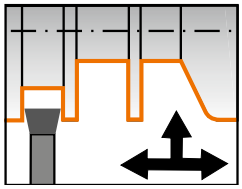
Garant Grooving toolholder with t_{max} ≤ 12.5×groove width w

Made of high-tensile tool steel (>1300 N/mm²). In conjunction with the convex indexable insert clamping, the system achieves very high resistance to axial and radial cutting forces and thereby significantly increases the surface quality and productivity.

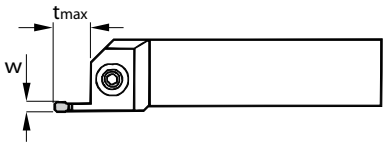
Note:	Dimension ∅ max = limited workpiece ∅ due to the tool type. From 19.5 mm (up to groove width 3 mm) and from 24.5 mm (from groove width 4 mm) the second cutter comes into contact with the workpiece. This can lead to scoring. If necessary, use single-ended grooving inserts No. 273656 – 273670.

Optimum washing of the cutting edge with coolant.





Up to groove depth 37.5 mm = 12.5 × w



eco grooving toolholder with groove depth t_{max} ≤ 12.5×groove width w

Size 16/3 – 8×w
Size 20/3; 25/3 – 10×w
Size 20/3L; 25/3L – 12.5×w **(groove depth up to 37.5 mm)**

Note:	Coolant transfer only in conjunction with GARANT eco-system toolholders No. 317900 – 319886.

27 3835

Positioning within the scale ensures precise coolant transfer.

Shank / groove width w	21W 27 3835	21W 27 3836	maximum ∅	t_{max}				Screw
	eco-grooving toolholder							
mm	right-hand	left-hand	mm	mm	mm	mm	mm	
16/3	XXX	XXX	50	25	16	43	90	279815 5 (TX25; 6 Nm)
20/3	XXX	XXX	60	30	21.5	49	108	279815 6 (TX25; 6 Nm)
20/3L	XXX	XXX	75	37.5	21.5	54	113	279815 6 (TX25; 6 Nm)
25/3	XXX	XXX	60	30	26.5	49	121	279815 6 (TX25; 6 Nm)
25/3L	XXX	XXX	75	37.5	26.5	54	125.5	279815 6 (TX25; 6 Nm)

Grooving toolholder with groove depth t_{max} ≤ 12.5×groove width w

Size 12/3 – 6.5×w
Size 16/4 – 7.5×w
Size 16/3; 20/4; 25/4 – 8×w
Size 20/3; 25/3 – 10×w
Size 20/3L; 25/3L – 12.5×w **(groove depth up to 37.5 mm)**

27 3760

Shank / groove width w	21W 27 3760	21W 27 3761	maximum ∅	t_{max}				Screw
	Grooving toolholder							
mm	right-hand	left-hand	mm	mm	mm	mm	mm	
12/3	XXX	XXX	40	20	12	35	150	279815 4 (TX15; 3.5 Nm)
16/3	XXX	XXX	50	25	16	41	150	279815 5 (TX25; 6 Nm)
20/3	XXX	XXX	60	30	21.5	46	150	279815 6 (TX25; 6 Nm)
20/3L	XXX	XXX	75	37.5	21.5	54	150	279815 6 (TX25; 6 Nm)
25/3	XXX	XXX	60	30	26.5	46	150	279815 6 (TX25; 6 Nm)
25/3L	XXX	XXX	75	37.5	26.5	54	150	279815 6 (TX25; 6 Nm)
16/4	XXX	XXX	60	30	16	48	150	279815 5 (TX25; 6 Nm)
20/4	XXX	XXX	65	32.5	21.5	51	150	279815 6 (TX25; 6 Nm)
25/4	XXX	XXX	65	32.5	26.5	51	150	279815 6 (TX25; 6 Nm)

Grooving toolholder with t_{max} = 7×groove width w

Made of high-tensile tool steel (> 1300 N/mm²). In conjunction with the convex insert clamping, the system achieves very high resistance to axial and radial cutting forces and thereby significantly increases the surface quality and productivity.

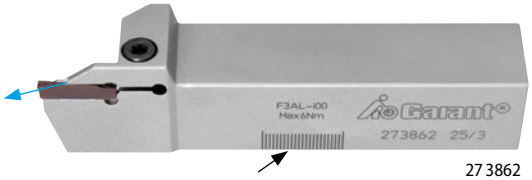
Note: From 19.5 mm groove depth (up to groove width 3 mm) and from 24.5 mm groove depth (from groove width 4 mm) the second cutter comes into contact with the workpiece. This can lead to scoring. If necessary, use single-ended grooving insert No. 273656 – 273670.

eco grooving toolholder with groove depth d_{max} = 7×groove width w

Note: Coolant transfer only in conjunction with GARANT eco-system toolholders No. 317900 – 319886.

Additional overhang:
Shank 16 mm = + 14 mm
Shank 20 mm = + 17 mm
Shank 25 mm = + 22 mm

long shank type



27 3862

Positioning within the scale ensures precise coolant transfer.

Shank / groove width w	21W 27 3862	21W 27 3863	t_{max}				Screw
	eco grooving toolholder, with long shank						
mm	right-hand	left-hand	mm	mm	mm	mm	
16/3	XXX	XXX	21	16	37	97.5	279815 5 (TX25; 6 Nm)
20/3	XXX	XXX	21	21.5	36.5	112	279815 6 (TX25; 6 Nm)
25/3	XXX	XXX	21	26.5	36.5	130	279815 6 (TX25; 6 Nm)

Shank / groove width w	21W 27 3860	21W 27 3861	t_{max}				Screw
	eco-grooving toolholder						
mm	right-hand	left-hand	mm	mm	mm	mm	
16/2	XXX	XXX	14	16	31.5	78.5	279815 5 (TX25; 6 Nm)
20/2	XXX	XXX	14	21.5	33.5	92.5	279815 6 (TX25; 6 Nm)
25/2	XXX	XXX	14	26.5	33.5	105	279815 6 (TX25; 6 Nm)
16/3	XXX	XXX	21	16	37	84	279815 5 (TX25; 6 Nm)
20/3	XXX	XXX	21	21.5	36.5	95.5	279815 6 (TX25; 6 Nm)
25/3	XXX	XXX	21	26.5	36.5	108	279815 6 (TX25; 6 Nm)
16/4	XXX	XXX	28	16	45.5	92.5	279815 5 (TX25; 6 Nm)
20/4	XXX	XXX	28	21.5	48	107	279815 7 (TX30; 8 Nm)
25/4	XXX	XXX	28	26.5	48	119.5	279815 7 (TX30; 8 Nm)

Grooving toolholder with groove depth t_{max} = 7×groove width w

27 3757

Shank / groove width w	21W 27 3757	21W 27 3758	t_{max}				Screw
	Grooving toolholder						
mm	right-hand	left-hand	mm	mm	mm	mm	
12/1,5	XXX	XXX	10.5	12	28.5	150	279815 4 (TX15; 3.5 Nm)
16/1,5	XXX	XXX	10.5	16	30	100	279815 4 (TX15; 3.5 Nm)
20/1,5	XXX	XXX	10.5	21.5	30	125	279815 6 (TX25; 6 Nm)
25/1,5	XXX	XXX	10.5	26.5	29	150	279815 6 (TX25; 6 Nm)
12/2	XXX	XXX	14	12	31.5	150	279815 4 (TX15; 3.5 Nm)
16/2	XXX	XXX	14	16	31.5	100	279815 5 (TX25; 6 Nm)
20/2	XXX	XXX	14	21.5	33.5	125	279815 6 (TX25; 6 Nm)
25/2	XXX	XXX	14	26.5	33.5	150	279815 6 (TX25; 6 Nm)
16/3	XXX	XXX	21	16	37	100	279815 5 (TX25; 6 Nm)
20/3	XXX	XXX	21	21.5	36.5	125	279815 6 (TX25; 6 Nm)
25/3	XXX	XXX	21	26.5	36.5	150	279815 6 (TX25; 6 Nm)
32/3	XXX	XXX	21	26.5	36.5	170	279815 6 (TX25; 6 Nm)
20/4	XXX	XXX	28	21.5	48	125	279815 7 (TX30; 8 Nm)
25/4	XXX	XXX	28	26.5	48	150	279815 7 (TX30; 8 Nm)
32/4	XXX	XXX	28	26.5	48	170	279815 7 (TX30; 8 Nm)

Garant Grooving toolholder with t_{max} = 5×groove width w

Made of high-tensile tool steel (>1300 N/mm²). In conjunction with the convex indexable insert clamping, the system achieves very high resistance to axial and radial cutting forces and thereby significantly increases the surface quality and productivity.

Note: From groove width 6 mm at tmax 5×groove width, the second cutter comes into contact with the workpiece. This can lead to scoring. Reliably free of scoring up to tmax 24.5 mm.

eco grooving toolholder with groove depth d_{max} = 5×groove width w

Note: Coolant transfer only in conjunction with GARANT eco-system toolholders No. 317900 – 319886.

27 3830

Positioning within the scale ensures precise coolant transfer.

Shank / groove width w	21W 27 3830	21W 27 3831	t_{max}				Screw
	eco-grooving toolholder						
mm	right-hand	left-hand	mm	mm	mm	mm	
16/2	XXX	XXX	10	16	30.5	77.5	279815 5 (TX25; 6 Nm)
20/2	XXX	XXX	10	21.5	33.5	92.5	279815 6 (TX25; 6 Nm)
25/2	XXX	XXX	10	26.5	33.5	105	279815 6 (TX25; 6 Nm)
16/3	XXX	XXX	15	16	31.5	78.5	279815 5 (TX25; 6 Nm)
20/3	XXX	XXX	15	21.5	34.5	93.5	279815 6 (TX25; 6 Nm)
25/3	XXX	XXX	15	26.5	34.5	106	279815 6 (TX25; 6 Nm)
16/4	XXX	XXX	20	16	37.5	84.5	279815 5 (TX25; 6 Nm)
20/4	XXX	XXX	20	21.5	40.5	99.5	279815 7 (TX30; 8 Nm)
25/4	XXX	XXX	20	26.5	40.5	112	279815 7 (TX30; 8 Nm)
20/5	XXX	XXX	25	21.5	40.5	99.5	279815 7 (TX30; 8 Nm)
25/5	XXX	XXX	25	26.5	40.5	112	279815 7 (TX30; 8 Nm)
20/6	XXX	XXX	30	21.5	40.5	99.5	279815 7 (TX30; 8 Nm)
25/6	XXX	XXX	30	26.5	40.5	112	279815 7 (TX30; 8 Nm)

Grooving toolholder with groove depth t_{max} = 5×groove width w

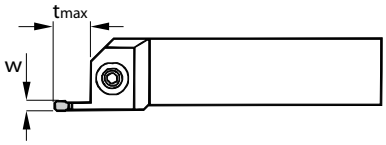
27 3755

Shank / groove width w	21W 27 3755	21W 27 3756	t_{max}				Screw
	Grooving toolholder						
mm	right-hand	left-hand	mm	mm	mm	mm	
8/1,5	XXX	XXX	7.5	8	20.5	125	279815 12 (TX15; 3.5 Nm)
10/1,5	XXX	XXX	7.5	10	20.5	120	279815 4 (TX15; 3.5 Nm)
12/1,5	XXX	XXX	7.5	12	26	150	279815 4 (TX15; 3.5 Nm)
16/1,5	XXX	XXX	7.5	16	29	100	279815 4 (TX15; 3.5 Nm)
20/1,5	XXX	XXX	7.5	21.5	29.5	125	279815 6 (TX25; 6 Nm)
25/1,5	XXX	XXX	7.5	26.5	29	150	279815 6 (TX25; 6 Nm)
10/2	XXX	XXX	10	10	26	120	279815 4 (TX15; 3.5 Nm)
12/2	XXX	XXX	10	12	30	150	279815 4 (TX15; 3.5 Nm)
16/2	XXX	XXX	10	16	30	100	279815 5 (TX25; 6 Nm)
20/2	XXX	XXX	10	21.5	33	125	279815 6 (TX25; 6 Nm)
25/2	XXX	XXX	10	26.5	33	150	279815 6 (TX25; 6 Nm)
12/2,5	XXX	XXX	12.5	12	31	150	279815 4 (TX15; 3.5 Nm)
16/2,5	XXX	XXX	12.5	16	31	100	279815 5 (TX25; 6 Nm)
20/2,5	XXX	XXX	12.5	21.5	33	125	279815 6 (TX25; 6 Nm)
25/2,5	XXX	XXX	12.5	26.5	33	150	279815 6 (TX25; 6 Nm)
12/3	XXX	XXX	15	12	30	150	279815 4 (TX15; 3.5 Nm)
16/3	XXX	XXX	15	16	31	100	279815 5 (TX25; 6 Nm)
20/3	XXX	XXX	15	21.5	34	125	279815 6 (TX25; 6 Nm)
25/3	XXX	XXX	15	26.5	34	150	279815 6 (TX25; 6 Nm)
32/3	XXX	XXX	15	26.5	34	170	279815 6 (TX25; 6 Nm)
16/4	XXX	XXX	20	16	37	100	279815 5 (TX25; 6 Nm)
20/4	XXX	XXX	20	21.5	40	125	279815 7 (TX30; 8 Nm)
25/4	XXX	XXX	20	26.5	40	150	279815 7 (TX30; 8 Nm)
32/4	XXX	XXX	20	26.5	40	170	279815 7 (TX30; 8 Nm)
20/5	XXX	XXX	25	21.5	43	125	279815 7 (TX30; 8 Nm)
25/5	XXX	XXX	25	26.5	43	150	279815 7 (TX30; 8 Nm)
32/5	XXX	XXX	25	26.5	43	170	279815 7 (TX30; 8 Nm)
20/6	XXX	XXX	30	21.5	49	125	279815 7 (TX30; 8 Nm)
25/6	XXX	XXX	30	26.5	50	150	279815 7 (TX30; 8 Nm)
32/6	XXX	XXX	30	26.5	50	170	279815 7 (TX30; 8 Nm)

Garant Grooving toolholder with t_{max} = 3×groove width w

Made of high-tensile tool steel (>1300 N/mm²). In conjunction with the convex indexable insert clamping, the system achieves very high resistance to axial and radial cutting forces and thereby significantly increases the surface quality and productivity.

27 3750

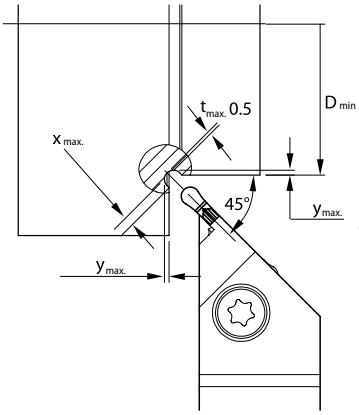


Shank / groove width w	21W 27 3750	21W 27 3751	t_{max}				Screw
	Grooving toolholder						
mm	right-hand	left-hand	mm	mm	mm	mm	
8/1,5	XXX	XXX	4.5	8	20.5	125	279815 12 (TX15; 3.5 Nm)
10/1,5	XXX	XXX	4.5	10	20.5	120	279815 4 (TX15; 3.5 Nm)
12/1,5	XXX	XXX	4.5	12	26	150	279815 4 (TX15; 3.5 Nm)
16/1,5	XXX	XXX	4.5	16	26	100	279815 4 (TX15; 3.5 Nm)
20/1,5	XXX	XXX	4.5	21.5	29	125	279815 6 (TX25; 6 Nm)
25/1,5	XXX	XXX	4.5	26.5	29	150	279815 6 (TX25; 6 Nm)
10/2	XXX	XXX	6	10	26	120	279815 4 (TX15; 3.5 Nm)
12/2	XXX	XXX	6	12	30	150	279815 4 (TX15; 3.5 Nm)
16/2	XXX	XXX	6	16	30	100	279815 5 (TX25; 6 Nm)
20/2	XXX	XXX	6	21.5	33	125	279815 6 (TX25; 6 Nm)
25/2	XXX	XXX	6	26.5	33	150	279815 6 (TX25; 6 Nm)
12/3	XXX	XXX	9	12	30	150	279815 4 (TX15; 3.5 Nm)
16/3	XXX	XXX	9	16	30	100	279815 5 (TX25; 6 Nm)
20/3	XXX	XXX	9	21.5	33	125	279815 6 (TX25; 6 Nm)
25/3	XXX	XXX	9	26.5	33	150	279815 6 (TX25; 6 Nm)
32/3	XXX	XXX	9	26.5	33	170	279815 6 (TX25; 6 Nm)
12/4	XXX	XXX	12	12	35	150	279815 4 (TX15; 3.5 Nm)
16/4	XXX	XXX	12	16	35	100	279815 5 (TX25; 6 Nm)
20/4	XXX	XXX	12	21.5	37	125	279815 7 (TX30; 8 Nm)
25/4	XXX	XXX	12	26.5	37	150	279815 7 (TX30; 8 Nm)
32/4	XXX	XXX	12	26.5	37	170	279815 7 (TX30; 8 Nm)
20/5	XXX	XXX	15	21.5	38	125	279815 7 (TX30; 8 Nm)
25/5	XXX	XXX	15	26.5	38	150	279815 7 (TX30; 8 Nm)
32/5	XXX	XXX	15	26.5	38	170	279815 7 (TX30; 8 Nm)
20/6	XXX	XXX	18	21.5	40	125	279815 7 (TX30; 8 Nm)
25/6	XXX	XXX	18	26.5	39	150	279815 7 (TX30; 8 Nm)
32/6	XXX	XXX	18	26.5	39	170	279815 7 (TX30; 8 Nm)

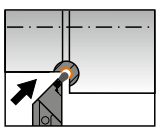
Garant Grooving toolholder 45°

Application: For free turning operations directly up to a shoulder, to create free undercuts for threading and grinding work.

Note:
- **ØD$_{min}$ = 30 mm.**
- Use only with a full radius groove turning insert No. 273735 – 273739 size 3.



27 3762



Shank / groove width w	21W 27 3762	21W 27 3763	t_{max}	x	y				Screw
	Grooving toolholder 45°								
	right-hand	left-hand	mm	mm	mm	mm	mm	mm	
16/2	XXX	XXX	0.5	1	0.65	19	33	100	279815 5 (TX25; 6 Nm)
20/2	XXX	XXX	0.5	1	0.65	23	33	125	279815 6 (TX25; 6 Nm)
25/2	XXX	XXX	0.5	1	0.65	28	33	150	279815 6 (TX25; 6 Nm)
16/3	XXX	XXX	0.5	1.56	0.79	19	33	100	279815 5 (TX25; 6 Nm)
20/3	XXX	XXX	0.5	1.56	0.79	23	33	125	279815 6 (TX25; 6 Nm)
25/3	XXX	XXX	0.5	1.56	0.79	28	33	150	279815 6 (TX25; 6 Nm)

Garant eco blade carriers, straight

Application: In conjunction with GARANT eco-toolholder No. **273840 – 273846.**
Spare part: Clamp screw No. 279815 9.
Attention: Without clamping screws (these are supplied with the toolholders).

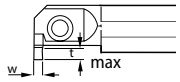
27 3880

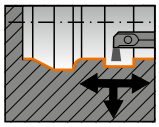
Groove width w	21W 27 3880	21W 27 3881	t_{max}
	eco blade carrier flat		
mm	right-hand	left-hand	mm
2	XXX	XXX	21
2,5	XXX	XXX	21
3	XXX	XXX	21
4	XXX	XXX	28
5	XXX	XXX	28
6	XXX	XXX	28

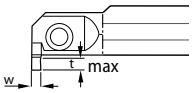
Garant Grooving toolholder – boring bar

Note:
Size 20/3L – Insertion Ø D_{min} = 25 mm up to a length of 30.5 mm.
Insertion Ø D_{min} = 27.5 mm on the entire length.

27 3790







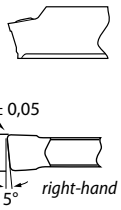
27 3790_20/3L

Shank Ø d / groove width w	21W 27 3790	21W 27 3791	t_{max} internal machining	Ø D_{min}				Screw
	Boring bar for grooving							
mm	right-hand	left-hand	mm	mm	mm	mm	mm	
12/1,5	XXX	XXX	4.5	16	9.5	30	140	279815 12 (TX15; 3.5 Nm)
16/1,5	XXX	XXX	4.5	16	7.5	30	180	279815 12 (TX15; 3.5 Nm)
16/1,5X	XXX	XXX	6	19	10.5	30	180	279815 12 (TX15; 3.5 Nm)
20/1,5	XXX	XXX	6	25	14.5	30	180	279815 8 (TX20; 4.5 Nm)
16/2	XXX	XXX	6	23	14.5	30	180	279815 9 (TX25; 4.5 Nm)
20/2	XXX	XXX	6	25	14.5	30	200	279815 8 (TX20; 4.5 Nm)
25/2	XXX	XXX	6	32	19	40	250	279815 8 (TX20; 4.5 Nm)
32/2	XXX	XXX	10	39	22	50	300	279815 8 (TX20; 4.5 Nm)
40/2	XXX	XXX	11.5	49	27	60	350	279815 8 (TX20; 4.5 Nm)
20/2,5	XXX	XXX	6	25	14.5	30	200	279815 8 (TX20; 4.5 Nm)
25/2,5	XXX	XXX	6	32	19	40	250	279815 8 (TX20; 4.5 Nm)
16/3	XXX	XXX	6	23	14.5	30	180	279815 9 (TX25; 4.5 Nm)
20/3	XXX	XXX	6	25	14.5	30	200	279815 8 (TX20; 4.5 Nm)
20/3L	XXX	XXX	6	27.5	17	–	200	279815 8 (TX20; 4.5 Nm)
25/3	XXX	XXX	6	32	19	40	250	279815 8 (TX20; 4.5 Nm)
32/3	XXX	XXX	9.5	40	22	50	300	279815 8 (TX20; 4.5 Nm)
40/3	XXX	XXX	11.5	49	27	60	350	279815 8 (TX20; 4.5 Nm)
25/4	XXX	XXX	9.5	32	19	40	250	279815 8 (TX20; 4.5 Nm)
32/4	XXX	XXX	11.5	40	22	50	300	279815 8 (TX20; 4.5 Nm)
40/4	XXX	XXX	13	49	27	60	350	279815 8 (TX20; 4.5 Nm)
25/5	XXX	XXX	9.5	32	19	40	250	279815 8 (TX20; 4.5 Nm)
32/5	XXX	XXX	11.5	40	22	50	300	279815 8 (TX20; 4.5 Nm)
40/5	XXX	XXX	13	49	27	60	350	279815 8 (TX20; 4.5 Nm)
25/6	XXX	XXX	9.5	32	19	40	250	279815 8 (TX20; 4.5 Nm)
32/6	XXX	XXX	11.5	40	22	50	300	279815 8 (TX20; 4.5 Nm)
40/6	XXX	XXX	13	49	27	60	350	279815 8 (TX20; 4.5 Nm)

Grooving inserts

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 67 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	CuZn	Graphite GRP CRP	Uni	○	○	○	●	●
ISO code	N	N	N	P	P	P	P	P	H	H	H	M	M	S	K	N	N						
HB7310 / HU7310	350	350	280											50					●	○		●	
CBN825									100	100	100								●	○			●
PKD	650	650	650													550	400		●			●	●
HB7010				230	190	180	150	130				150	140	70	200	250		●	●			●	○
HB7020				220	180	170	140	120				140	130	60	200	250		●	●			●	○
CU7025				210	170	140													●				●
HB7215				300	250	210									280				●			●	○

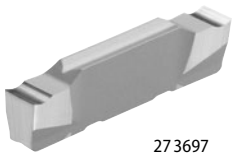
Single-ended parting-off / grooving inserts



27 3668

Groove width w		mm	2	3	4		●	○	Corner radius R mm
2IJ 27 3656	Parting-off insert **right-hand 5°**	HB7020	XXX	–	–	10	P	M	0.2
2IJ 27 3657	Parting-off insert **left-hand 5°**	HB7020	XXX	–	–	10	P	M	0.2
2IJ 27 3658	Parting-off insert **right-hand 5°**	HB7020	–	XXX	–	10	P	M	0.3
2IJ 27 3659	Parting-off insert **left-hand 5°**	HB7020	–	XXX	–	10	P	M	0.3
2IJ 27 3668	Parting-off / grooving insert	HB7020	XXX	–	–	10	P	M	0.2
2IL 27 3664		HU7310	XXX	XXX	XXX	10	N	Ti	0.2
2IJ 27 3670		HB7020	–	XXX	XXX	10	P	M	0.3
Tolerance groove width w		mm	±0.03	±0.03	±0.04				
f		mm/rev.	0.05 – 0.15	0.07 – 0.2	0.08 – 0.26				

Double-ended parting-off / grooving inserts


27 3697

27 3690

27 3704

Groove width w		mm	1,5	2	2,5	3	4	5	6		●	○	Corner radius R mm
2IL 27 3678	Parting-off insert **right-hand 10°**	HU7310	–	XXX	XXX	XXX	XXX	–	–	10	N	Ti	0.05
2IL 27 3680	Parting-off insert **left-hand 10°**	HU7310	–	XXX	XXX	XXX	XXX	–	–	10	N	Ti	0.05
2IJ 27 3682	Parting-off insert **right-hand 5°**	HB7020	–	XXX	–	–	–	–	–	10	P	M	0.2
2IJ 27 3686	Parting-off insert **left-hand 5°**	HB7020	–	XXX	–	–	–	–	–	10	P	M	0.2
2IJ 27 3690	Parting-off insert **right-hand 5°**	HB7020	–	–	–	XXX	XXX	–	–	10	P	M	0.3
2IJ 27 3694	Parting-off insert **left-hand 5°**	HB7020	–	–	–	XXX	XXX	–	–	10	P	M	0.3
2IJ 27 3699	Parting-off / grooving insert	HB7010	XXX	XXX	XXX	–	–	–	–	10	P	K	0.2
2IJ 27 3700		HB7020	XXX	XXX	XXX	–	–	–	–	10	P	M	0.2
2IJ 27 3702		HB7215	–	XXX	XXX	–	–	–	–	10	K	P	0.2
2IL 27 3697		HU7310	–	XXX	XXX	XXX	XXX	XXX	XXX	10	N	Ti	0.2
2IJ 27 3707		HB7010	–	–	–	XXX	XXX	–	–	10	P	K	0.3
2IJ 27 3704		HB7020	–	–	–	XXX	XXX	–	–	10	P	M	0.3
2IJ 27 3706		HB7215	–	–	–	XXX	XXX	–	–	10	K	P	0.3
2IJ 27 3708		HB7020	–	–	–	–	–	XXX	XXX	10	P	M	0.4
Tolerance groove width w		mm	±0.03	±0.03	±0.03	±0.03	±0.04	±0.04	±0.04				
f		mm/rev.	0.03 – 0.12	0.05 – 0.15	0.06 – 0.17	0.07 – 0.2	0.08 – 0.26	0.08 – 0.28	0.09 – 0.34				

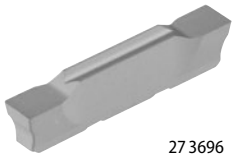
Chip breaker for small Ø and reduction in cutting forces.

27 3701

Groove width w		mm	1,5	2	2,5	3	4	5	6		●	○	Corner radius R mm
27 3672	Parting-off / grooving insert	CU7025	XXX	–	–	–	–	–	–	10	P	–	0.1
27 3674		HB7010	XXX	–	–	–	–	–	–	10	P	K	0.1
27 3676		HB7020	XXX	–	–	–	–	–	–	10	P	M	0.1
27 3698		CU7025	XXX	XXX	XXX	XXX	XXX	–	–	10	P	–	0.2
27 3701		HB7020	–	XXX	–	XXX	–	–	–	10	P	M	0.2
27 3703		CU7025	–	–	–	–	–	XXX	XXX	10	P	–	0.3
Tolerance groove width w		mm	±0.03	±0.03	±0.03	±0.03	±0.04	±0.04	±0.04				
f		mm/rev.	0.03 – 0.12	0.05 – 0.15	0.06 – 0.17	0.07 – 0.2	0.08 – 0.26	0.08 – 0.28	0.09 – 0.34				

Double-sided grooving insert – blanks

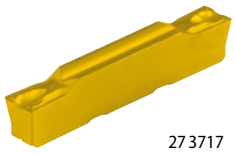
Application: For grinding specific profiles.



27 3696

Groove width w		mm	2,2	2,7	3,4	4,2	5,2	6,55		●	○
27 3696	Grooving insert **Blank**	HU7310	XXX	XXX	XXX	XXX	XXX	XXX	10	N	Ti

Double-ended grooving inserts finishing



27 3717

Groove width w		mm	2	3	4	5	6		●	○	Corner radius R mm
27 3718	Grooving insert **Finishing**	HB7010	XXX	XXX	XXX	–	–	10	P	K	0.2
27 3715		HB7020	XXX	XXX	XXX	–	–	10	P	M	0.2
27 3717		HB7215	XXX	XXX	XXX	–	–	10	K	P	0.2
27 3716		HB7310	XXX	XXX	XXX	–	–	10	N	Ti	0.2
27 3722		CU7025	XXX	–	–	–	–	10	P	–	0.2
27 3720		CU7025	–	XXX	XXX	XXX	XXX	10	P	–	0.4
27 3723		HB7010	–	XXX	XXX	–	–	10	P	K	0.4
27 3719		HB7020	–	XXX	XXX	XXX	XXX	10	P	M	0.4
27 3721		HB7215	–	XXX	XXX	–	–	10	K	P	0.4
Tolerance groove width w		mm	±0.03	±0.03	±0.04	±0.04	±0.04				
a_p		mm	0.2 – 1.1	0.4 – 1.5	0.5 – 2	0.7 – 2.6	0.9 – 3				
f		mm/rev.	0.04 – 0.14	0.05 – 0.2	0.06 – 0.22	0.07 – 0.25	0.08 – 0.3				

Double-ended grooving insert medium machining

27 3729

Groove width w		mm	2	2,5	3	4	5	6		●	○	Corner radius R mm
27 3728	Grooving insert **medium machining**	HB7010	XXX	–	XXX	–	–	–	10	P	K	0.2
27 3725		HB7020	XXX	XXX	XXX	–	–	–	10	P	M	0.2
27 3727		HB7215	XXX	XXX	XXX	–	–	–	10	K	P	0.2
27 3732		CU7025	XXX	–	–	–	–	–	10	P	–	0.2
27 3730		CU7025	–	–	XXX	XXX	XXX	XXX	10	P	–	0.4
27 3733		HB7010	–	–	XXX	XXX	–	–	10	P	K	0.4
27 3729		HB7020	–	–	XXX	XXX	XXX	XXX	10	P	M	0.4
27 3731		HB7215	–	–	XXX	XXX	–	–	10	K	P	0.4
27 3734		HB7020	–	–	XXX	XXX	XXX	XXX	10	P	M	0.8
Tolerance groove width w		mm	±0.03	±0.03	±0.03	±0.04	±0.04	±0.04				
a_p		mm	0.2 – 1.1	0.5 – 1.2	0.8 – 1.7	0.9 – 2.2	1 – 2.7	1.2 – 3.3				
f		mm/rev.	0.05 – 0.15	0.08 – 0.2	0.1 – 0.23	0.1 – 0.26	0.12 – 0.3	0.13 – 0.33				

Double-ended grooving inserts full radius

27 3736

Groove width w		mm	2	2,5	3	4	5	6		●	○
21J 27 3736	Grooving insert **Full radius**	CU7025	–	–	XXX	XXX	XXX	XXX	10	P	–
21J 27 3738		HB7010	XXX	–	XXX	XXX	–	–	10	P	K
21J 27 3735		HB7020	XXX	XXX	XXX	XXX	XXX	XXX	10	P	M
21J 27 3737		HB7215	XXX	XXX	XXX	XXX	–	–	10	K	P
21L 27 3739		HB7310	XXX	–	XXX	XXX	–	–	10	N	Ti
Tolerance groove width w		mm	±0.03	±0.03	±0.03	±0.04	±0.04	±0.04			
a_p		mm	0.1 – 0.6	0.2 – 0.7	0.5 – 1.2	0.6 – 1.6	0.7 – 2	0.8 – 2.3			
f		mm/rev.	0.06 – 0.14	0.08 – 0.16	0.1 – 0.18	0.1 – 0.22	0.12 – 0.26	0.12 – 0.3			

Single-ended grooving inserts CBN / PCD

27 3743/3749 – **With laser-profiled chipbreaker** for optimum chip formation.

27 3740

27 3743

27 3746

27 3749

Groove width w		mm	2	3	4	5	6	●	Corner radius R mm
21H 27 3740	Grooving insert **straight cutting edge**	HB9035	XXX	XXX	XXX	XXX	–	H	0.2
21L 27 3743		PCD	XXX	XXX	XXX	XXX	XXX	N	0.2
21H 27 3746	Grooving insert **Full radius**	HB9035	XXX	XXX	XXX	XXX	XXX	H	–
21L 27 3749		PCD	XXX	XXX	XXX	XXX	XXX	N	–
Tolerance groove width w		mm	±0.03						

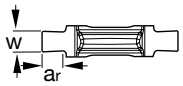
Double-sided grooving inserts for grooves < 3 mm

DIN 471	DIN 472

Application: With grooving toolholder for insert width 3 mm.

Note: The tool holders must be suitably reworked to suit the groove width.

27 3665



Groove width w		mm	0,5	0,7	0,8	0,9	1,15	1,35	1,65	1,90	2,15	2,65		●	○
21L 27 3665	Grooving insert	HB7010	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	10	P	K
a_r		mm	1.3	1.3	1.3	1.3	1.4	1.6	1.9	2.15	2.4	2.9			
for retaining ring to DIN471/472		mm	0.4	0.6	0.7	0.8	1	1.2	1.5	1.75	2	2.5			

Double-sided grooving inserts for grooves < 3 mm set

27 3667

Type			0,9-2,65	●	○
21L 27 3667	Set of grooving inserts	HB7010	XXX	P	K
Content: 2× each No. 273665			Size 0.9; 1.15; 1.35;		
1× each No. 273665			Size 1.65; 1.90; 2.15; 2.65		

Garant Grooving toolholder for triangular grooving inserts

Grooving toolholder 0° for external radial grooving

Note: For **right-hand toolholders** use **right-hand inserts,** for **left-hand toolholders** use **left-hand inserts.**

Shank size	21W 27 3910	21W 27 3911			Insert screw
	Grooving toolholder				
mm	right-hand	left-hand	mm	mm	
12	XXX	XXX	16.2	100	279815 13
16	XXX	XXX	20.2	125	279815 13
20	XXX	XXX	25.2	125	279815 13
25	XXX	XXX	30.2	150	279815 13

27 3910

Grooving toolholder for internal radial grooving

Note: For **right-hand toolholders** use **left-hand inserts,** for **left-hand toolholders** use **right-hand inserts.**

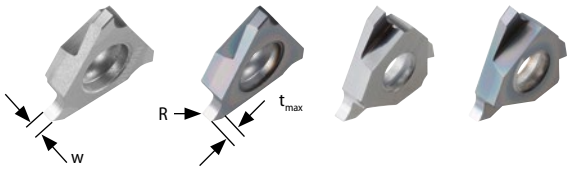
Shank Ø d	21W 27 3914	21W 27 3915					Insert screw
	Boring bar		Ø D_{min}				
mm	right-hand	left-hand	mm	mm	mm	mm	
25	XXX	XXX	30.5	17.5	11.5	250	279815 13
32	XXX	XXX	40	23	15	250	279815 13
40	XXX	XXX	48	27	18.5	300	279815 13

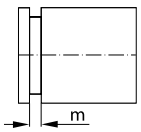
27 3914

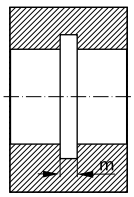
DIN 471 DIN 472

Garant Triangular grooving inserts

Grooving inserts for retaining ring profile grooves, external and internal







Width groove m (H13)	21J 27 3900	21J 27 3902	21J 27 3906	21J 27 3908		w	t_{max}	Corner radius R	for circlips to DIN 471 / 472 ring thickness
	Grooving insert								
mm	right-hand	right-hand	left-hand	left-hand		mm	mm	mm	mm
0,5	XXX	XXX	XXX	XXX	10	0.525	1.2	0.05	0.4
0,7	XXX	XXX	XXX	XXX	10	0.75	1.2	0.05	0.6
0,8	XXX	XXX	XXX	XXX	10	0.85	1.2	0.05	0.7
0,9	XXX	XXX	XXX	XXX	10	0.95	2	0.05	0.8
1,0	XXX	XXX	XXX	XXX	10	1	2	0.05	–
1,1	XXX	XXX	XXX	XXX	10	1.1	2	0.05	1
1,3	XXX	XXX	XXX	XXX	10	1.3	2	0.2	1.2
1,5	XXX	XXX	XXX	XXX	10	1.5	2.5	0.2	–
1,6	XXX	XXX	XXX	XXX	10	1.6	2.5	0.2	1.5
1,85	XXX	XXX	XXX	XXX	10	1.85	2.5	0.2	1.75
2,0	XXX	XXX	XXX	XXX	10	2	2.5	0.2	–
2,15	XXX	XXX	XXX	XXX	10	2.15	2.5	0.2	2
2,5	XXX	XXX	XXX	XXX	10	2.5	2.5	0.2	–
2,65	XXX	XXX	XXX	XXX	10	2.65	2.5	0.2	2.5
3,0	XXX	XXX	XXX	XXX	10	3	2.5	0.2	–
●	N	P	N	P					
○	–	M	–	M					
⚙	◉	◉	◉	◉					
Grade	HU9315	HB9635	HU9315	HB9635					
v_c main application mm/min	70 – 280	110 – 170	70 – 280	110 – 170					
v_c secondary application mm/min	–	90 – 140	–	90 – 140					

Holder for carbide inserts (axial grooving)

With through-coolant and adjustment screw for positioning the tools.

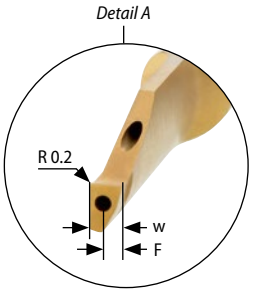
27 4100

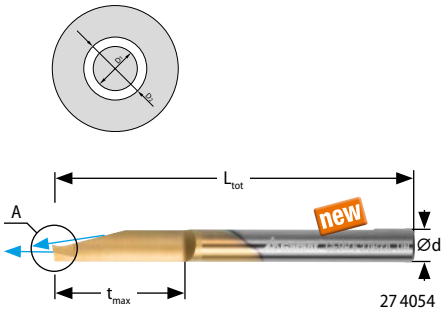
Ø D	21U 27 4100	21U 27 4102	L_{tot}	L_1	Ø D_1	Clamping screw	Adjustment screw
	Holder for carbide inserts						
	Ø d = 6 mm	Ø d = 8 mm	mm	mm	mm		
16	XXX	XXX	88	19	20	279815 15	279815 16
20	XXX	XXX	88	19	20	279815 15	279815 16

Carbide inserts for axial grooving

With through-coolant and additional flank face cooling.

Attention: Ordering size = minimum groove Ø.
Capable of cutting larger groove Ø without modification.
$D_1 = D_{min}$ internal Ø.
$D_2 = D_{min}$ external Ø.
L type with larger groove depth t_{max}.





27 4054

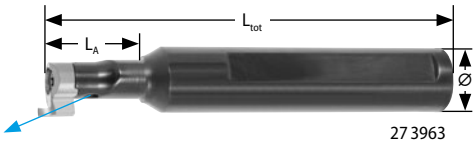
Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 67 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	CuZn	Graphite GRP CRP	Uni
ISO code	N	N	N	P	P	P	P	P	H	H	H	M	M	S	K	N	N	
27 4054/4056	50	90	70	55	55	50	40	35				45	45	25	55	50		

Ø D_{min} groove D_1 / D_2	21L 27 4054	21L 27 4056	Ø d	w	F	L_{tot}	t_{max}	f
	Carbide inserts for axial grooving							
mm	right-hand	left-hand	mm	mm	mm	mm	mm	mm
8/12	XXX	XXX	6	2	1.7	64	15	0.01 – 0.03
8/12L	XXX	XXX	6	2	1.7	64	22	0.01 – 0.03
7/12	XXX	XXX	6	2.5	2.2	64	22	0.01 – 0.03
14/20	XXX	XXX	8	3	2.5	64	27	0.01 – 0.03
14/20L	XXX	XXX	8	3	1.6	80	43	0.01 – 0.03
12/20	XXX	XXX	8	4	1.6	80	43	0.01 – 0.03

Boring bars for axial grooving

- Carbide insert screwed on to the end face, positive force transmission due to end face serrations.
- Insert change is very easy to handle.

27 3969 – Elliptical profile for very high flexional resistance.
27 3966/3969 – Low-vibration carbide shank with soldered steel head and hardened insert seat.



27 3963

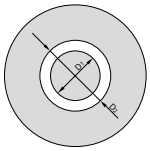
27 3966

27 3969

Shank Ø / Overhang L_A	21U 27 3963	21U 27 3966	21U 27 3969			Insert screw
	Boring bar steel	Boring bar carbide				
		round	elliptical	mm	mm	
12/12	XXX	–	–	11	70	279810 1
12/20	XXX	–	–	11	78	279810 1
12/34	–	XXX	XXX	11	100	279810 1
12/45	–	XXX	XXX	11	110	279810 1
12/64	–	–	XXX	11	130	279810 1
16/12	XXX	–	–	15	92	279810 1
16/20	XXX	–	–	15	100	279810 1
16/34	–	XXX	XXX	15	100	279810 1
16/45	–	XXX	XXX	15	110	279810 1
16/64	–	–	XXX	15	130	279810 1
16/75	–	–	XXX	15	145	279810 1

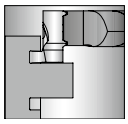
Garant Cutter inserts for axial grooving

Attention:
Ordering size = minimum groove Ø.
Capable of cutting larger groove Ø without modification.
$D_1 = D_{min}$ internal Ø.
$D_2 = D_{min}$ external Ø.
L type with larger groove depth t_{max}.



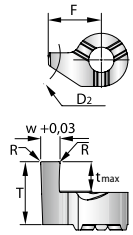
Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 67 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	CuZn	Graphite GRP CRP	Uni
ISO code	N	N	N	P	P	P	P	P	H	H	H	M	M	S	K	N	N	
27 3973–27 3979	200	120	120	110	110	90	90	90				80	60	25	60	100		

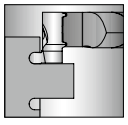
For external axial grooving



27 3973

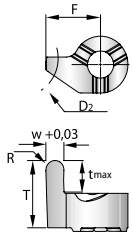
Ø D_{min} groove D_1 / D_2	21H 27 3973 Rectangular profile cutter insert	T	F	t_{max}	R	w	f
mm	HB720	mm	mm	mm	mm	mm	mm/rev.
10/12	XXX	7.3	9	1.5	0.2	1	0.01 – 0.02
9/12	XXX	8.3	9	2.5	0.2	1.5	0.01 – 0.02
8/12	XXX	8.8	9	3	0.2	2	0.01 – 0.02
8/12L	XXX	10.7	9	5	0.2	2	0.01 – 0.02
7/12	XXX	8.8	9	3	0.2	2.5	0.01 – 0.02
7/12L	XXX	10.7	9	5	0.2	2.5	0.01 – 0.02
6/12	XXX	8.8	9	3	0.2	3	0.01 – 0.02
6/12L	XXX	10.7	9	5	0.2	3	0.01 – 0.02



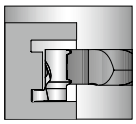


27 3975

Ø D_{min} groove D_1 / D_2	21H 27 3975 Round profile cutter insert	T	F	t_{max}	R	w	f
mm	HB720	mm	mm	mm	mm	mm	mm/rev.
8/12L	XXX	10.7	9	5	1	2	0.01 – 0.02
7/12L	XXX	10.7	9	5	1.25	2.5	0.01 – 0.02
6/12L	XXX	10.7	9	5	1.5	3	0.01 – 0.02

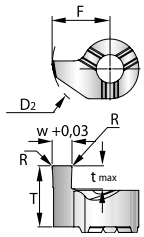


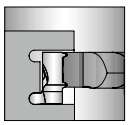
For internal axial grooving



27 3977

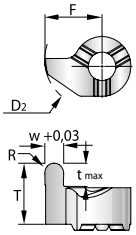
Ø D_{min} groove D_1 / D_2	21H 27 3977 Rectangular profile cutter insert	Ø D_{min}	T	F	t_{max}	R	w	f
mm	HB720	mm	mm	mm	mm	mm	mm	mm/rev.
12/14	XXX	14	7.7	9	1.5	0.2	1	0.01 – 0.02
11/14	XXX	14	8.7	9	2.5	0.2	1.5	0.01 – 0.02
10/14	XXX	14	9.2	9	3	0.2	2	0.01 – 0.02
10/14L	XXX	14	10.7	9	5	0.2	2	0.01 – 0.02
9/14	XXX	14	9.2	9	3	0.2	2.5	0.01 – 0.02
9/14L	XXX	14	10.7	9	5	0.2	2.5	0.01 – 0.02
8/14	XXX	14	9.2	9	3	0.2	3	0.01 – 0.02
8/14L	XXX	14	10.7	9	5	0.2	3	0.01 – 0.02





27 3979

Ø D_{min} groove D_1 / D_2	21H 27 3979 Round profile cutter insert	Ø D_{min}	T	F	t_{max}	R	w	f
mm	HB720	mm	mm	mm	mm	mm	mm	mm/rev.
12/14	XXX	14	7.7	9	1.5	0.5	1	0.01 – 0.02
10/14	XXX	14	9.2	9	3	1	2	0.01 – 0.02
8/14	XXX	14	9.2	9	3	1.5	3	0.01 – 0.02



eco grooving – toolholders / boring bars

GARANT eco-system toolholders with internal coolant supply to the cutting edge.

Supplied with: Including assembly screws.

Note: Coolant transfer only in conjunction with GARANT eco system toolholders No. **317900 – 319886** and GARANT eco cutter carriers No. **273880 – 273891**. Reduce starting values by 30 to 50% depending on the clamping situation and material.

eco toolholder straight – 0°

Suitable for:

27 3840 – Blade carriers No. 273880; 273886 and 273890.
27 3841 – Blade carriers No. 273881; 273887 and 273891.

Shank width b	21W 27 3840	21W 27 3841			Screw
	eco toolholder				
mm	right-hand	left-hand	mm	mm	
16	XXX	XXX	18.5	72	279815 9
20	XXX	XXX	22.5	84	279815 9
25	XXX	XXX	27.5	96.5	279815 9

27 3840

eco toolholder cranked – external 90°

Suitable for:

27 3845 – Blade carriers No. 273881 and 273891.
27 3846 – Blade carriers No. 273880 and 273890.

Shank width b	21W 27 3845	21W 27 3846			Screw
	eco toolholder				
mm	right-hand	left-hand	mm	mm	
16	XXX	XXX	20.5	79	279815 9
20	XXX	XXX	20.5	94	279815 9
25	XXX	XXX	20.5	109	279815 9

27 3845

eco boring bar

Suitable for:

27 3850 – Blade carrier No. 273886.
27 3851 – Blade carrier No. 273887.

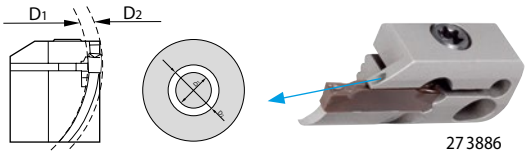
Ø d	21W 27 3850	21W 27 3851			Screw
	eco boring bar				
mm	right-hand	left-hand	mm	mm	
25	XXX	XXX	15	200	279815 9
32	XXX	XXX	18.5	250	279815 9

27 3850

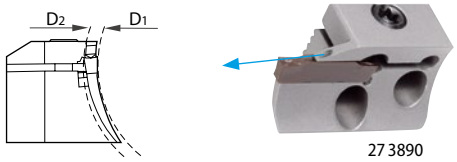
eco blade carrier for face grooving

Application: In conjunction with GARANT eco-toolholder No. **273840 – 273851.**
Spare part: Clamp screw No. 279815 9.
Attention: Without clamping screws (these are supplied with the toolholders).

Note: D_1 = minimum Ø for the first first groove / D_2 = minimum Ø for the second groove.



27 3886



27 3890

Ø range Groove D_1 / D_2	21W 27 3886	21W 27 3887	21W 27 3890	21W 27 3891	t_{max}
	eco blade carrier, convex for face grooving		eco blade carrier, concave for face grooving		
mm	right-hand	left-hand	right-hand	left-hand	mm
26/39	XXX	XXX	XXX	XXX	13
33/50	XXX	XXX	XXX	XXX	13
43/60	XXX	XXX	XXX	XXX	13
53/76	XXX	XXX	XXX	XXX	13
67/100	XXX	XXX	XXX	XXX	13
90/130	XXX	XXX	XXX	XXX	13
110/170	XXX	XXX	XXX	XXX	13
140/230	XXX	XXX	XXX	XXX	13
Groove width w mm	3	3	3	3	

Grooving toolholder for face grooving

- Extremely still connection and precise clamping due to serrated contact face between the tool holder and clamp.
- To ensure the optimum connection, the maximum tightening torque for the attachment screw is laser-etched on the shank.
- Very high positioning accuracy, together with very high resistance to axial and radial cutting forces.

Supplied with: Including assembly screws.

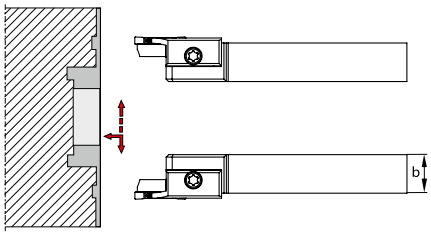
Note: Tool holders must be ordered separately.
Depending on the clamping situation and material, values should be reduced by 30 to 50 %.

27 3800

Toolholder, straight – external 0°

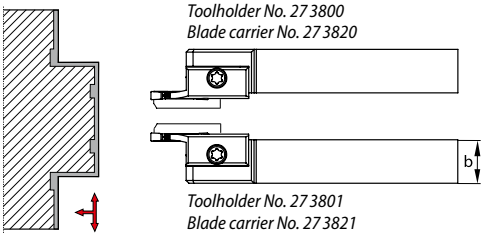
Suitable for:

27 3800 – Blade carriers No. 273812; 273815; 273817; 273820; 273822; 273824; 273826; 273828.
27 3801 – Blade carriers No. 273813; 273816; 273818; 273821; 273823; 273825; 273827; 273829.



Toolholder No. 27 3801
Blade carrier No. 27 3816

Toolholder No. 27 3800
Blade carrier No. 27 3815



Toolholder No. 27 3800
Blade carrier No. 27 3820

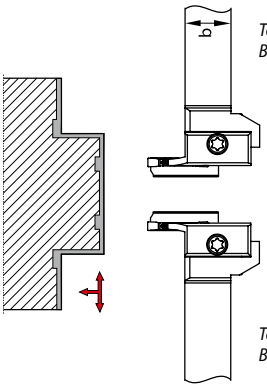
Toolholder No. 27 3801
Blade carrier No. 27 3821

Shank width b	21W 27 3800	21W 27 3801				Screw
	Toolholder straight – external 0°					
mm	right-hand	left-hand	mm	mm	mm	
16	XXX	XXX	18.5	38	113	279815 9 (TX25; 6 Nm)
20	XXX	XXX	22.5	38	138	279815 9 (TX25; 6 Nm)
25	XXX	XXX	27.5	38	163	279815 9 (TX25; 6 Nm)

Toolholder, cranked – external 90°

Suitable for:

27 3805 – Blade carriers No. 273821; 273823; 273825; 273829.
27 3806 – Blade carriers No. 273820; 273822; 273824; 273828.



Toolholder No. 27 3806
Blade carrier No. 27 3820

Toolholder No. 27 3805
Blade carrier No. 27 3821

27 3805

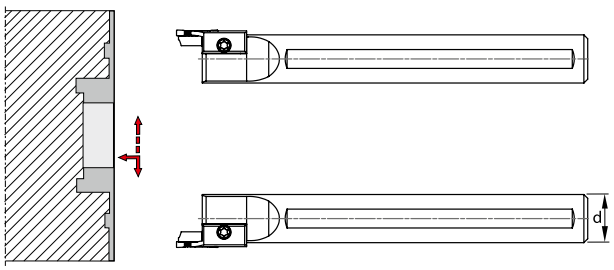
Shank width b	21W 27 3805	21W 27 3806				Screw
	Toolholder cranked – external 90°					
mm	right-hand	left-hand	mm	mm	mm	
16	XXX	XXX	29	20.5	110	279815 9 (TX25; 6 Nm)
20	XXX	XXX	33	20.5	135	279815 9 (TX25; 6 Nm)
25	XXX	XXX	38	20.5	160	279815 9 (TX25; 6 Nm)

Boring bars

Suitable for:

27 3810 – Blade carriers No. 273812; 273815; 273817; 273826.
27 3811 – Blade carriers No. 273813; 273816; 273818; 273827.

27 3810



Boring bar No. 27 3811
Blade carrier No. 27 3816

Boring bar No. 27 3810
Blade carrier No. 27 3815

Ø d	21W 27 3810	21W 27 3811				Screw
	Boring bar					
mm	right-hand	left-hand	mm	mm	mm	
25	XXX	XXX	15	38	213	279815 9 (TX25; 6 Nm)
32	XXX	XXX	18.5	38	263	279815 9 (TX25; 6 Nm)

Blade carrier for face grooving

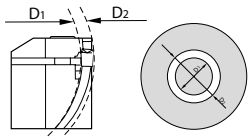
Extremely rigid connection and precise clamping due to serrated contact face between the tool holder and clamp.

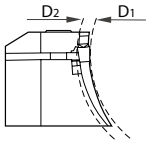
Application: In conjunction with toolholders No. 273800 to 273811.

Spare part: Clamp screw No. 279815 9.

Attention: Without clamping screws (these are supplied with the toolholders).

Note: D_1 = minimum ∅ for the first groove / D_2 = maximum ∅ for the first groove. Technology values should be reduced by 30 - 50 % depending on the clamping situation and material.





∅ range Groove D_1 / D_2	21W 27 3812	21W 27 3813	t_{max}
	Blade carrier, convex for face grooving		
mm	right-hand	left-hand	mm
26/34	XXX	XXX	13
33/43	XXX	XXX	13
41/53	XXX	XXX	13
51/67	XXX	XXX	13
65/85	XXX	XXX	13
82/110	XXX	XXX	13
105/143	XXX	XXX	13
138/190	XXX	XXX	13
Groove width w mm	2	2	

∅ range Groove D_1 / D_2	21W 27 3824	21W 27 3825	t_{max}
	Blade carrier, concave for face grooving		
mm	right-hand	left-hand	mm
26/34	XXX	XXX	13
33/43	XXX	XXX	13
41/53	XXX	XXX	13
51/67	XXX	XXX	13
65/85	XXX	XXX	13
82/110	XXX	XXX	13
105/143	XXX	XXX	13
138/190	XXX	XXX	13
Groove width w mm	2	2	

∅ range for Groove D_1 / D_2	21W 27 3826	21W 27 3827	t_{max}
	Blade carrier, convex for face grooving		
mm	right-hand	left-hand	mm
26/39	XXX	XXX	18
33/50	XXX	XXX	18
43/60	XXX	XXX	18
53/76	XXX	XXX	18
67/100	XXX	XXX	18
90/130	XXX	XXX	18
110/170	XXX	XXX	18
140/230	XXX	XXX	18
200/550	XXX	XXX	18
Groove width w mm	3	3	

∅ range for Groove D_1 / D_2	21W 27 3828	21W 27 3829	t_{max}
	Blade carrier, concave for face grooving		
mm	right-hand	left-hand	mm
26/39	XXX	XXX	18
33/50	XXX	XXX	18
43/60	XXX	XXX	18
53/76	XXX	XXX	18
67/100	XXX	XXX	18
90/130	XXX	XXX	18
110/170	XXX	XXX	18
140/230	XXX	XXX	18
200/550	XXX	XXX	18
Groove width w mm	3	3	

∅ range Groove D_1 / D_2	21W 27 3815	21W 27 3816	t_{max}
	Blade carrier, convex for face grooving		
mm	right-hand	left-hand	mm
26/39	XXX	XXX	13
33/50	XXX	XXX	13
43/60	XXX	XXX	13
53/76	XXX	XXX	13
67/100	XXX	XXX	13
90/130	XXX	XXX	13
110/170	XXX	XXX	13
140/230	XXX	XXX	13
200/550	XXX	XXX	13
Groove width w mm	3	3	

∅ range Groove D_1 / D_2	21W 27 3820	21W 27 3821	t_{max}
	Blade carrier, concave for face grooving		
mm	right-hand	left-hand	mm
26/39	XXX	XXX	13
33/50	XXX	XXX	13
43/60	XXX	XXX	13
53/76	XXX	XXX	13
67/100	XXX	XXX	13
90/130	XXX	XXX	13
110/170	XXX	XXX	13
140/230	XXX	XXX	13
200/550	XXX	XXX	13
Groove width w mm	3	3	

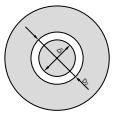
∅ range Groove D_1 / D_2	21W 27 3817	21W 27 3818	t_{max}
	Blade carrier, convex for face grooving		
mm	right-hand	left-hand	mm
26/41	XXX	XXX	15
38/55	XXX	XXX	15
52/72	XXX	XXX	15
67/100	XXX	XXX	15
90/130	XXX	XXX	15
110/170	XXX	XXX	15
150/250	XXX	XXX	15
Groove width w mm	4	4	

∅ range Groove D_1 / D_2	21W 27 3822	21W 27 3823	t_{max}
	Blade carrier, concave for face grooving		
mm	right-hand	left-hand	mm
26/41	XXX	XXX	15
38/55	XXX	XXX	15
52/72	XXX	XXX	15
67/100	XXX	XXX	15
90/130	XXX	XXX	15
110/170	XXX	XXX	15
150/250	XXX	XXX	15
Groove width w mm	4	4	

Blade carrier for face grooving

Application: In conjunction with toolholder No. 274002.
Attention: Without clamping screws (these are supplied with the toolholders).

Note: D_1 = minimum ∅ for the first groove / D_2 = maximum ∅ for the first groove.
Technology values should be reduced by 30 - 50 % depending on the clamping situation and material.
Please order the assembly key No. 279940 1 separately.



Medium blade carrier

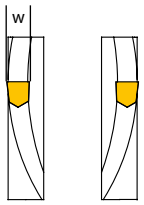
For grooving inserts No. 275000 – 275006.

∅ range Groove D_1 / D_2	21U 27 4010	21U 27 4012	21U 27 4014	21U 27 4016	t_{max}
	Medium blade carrier for face grooving				27 4010 27 4012 / 27 4014 27 4016
mm	right-hand	left-hand	right-hand	left-hand	mm / mm
19/30	XXX	XXX	XXX	XXX	16 / 12
24/35	XXX	XXX	XXX	XXX	16 / 12
29/40	XXX	XXX	XXX	XXX	22 / 14
34/50	XXX	XXX	XXX	XXX	22 / 14
Groove width w mm	3	3	3	3	

∅ range Groove D_1 / D_2	21U 27 4020	21U 27 4022	21U 27 4024	21U 27 4026	t_{max}
	Medium blade carrier for face grooving				27 4020 27 4022 / 27 4024 27 4026
mm	right-hand	left-hand	right-hand	left-hand	mm / mm
17/30	XXX	XXX	XXX	XXX	18 / 14
22/35	XXX	XXX	XXX	XXX	18 / 14
27/40	XXX	XXX	XXX	XXX	24 / 16
32/50	XXX	XXX	XXX	XXX	24 / 16
Groove width w mm	4	4	4	4	

27 4010

27 4012



right-hand

left-hand

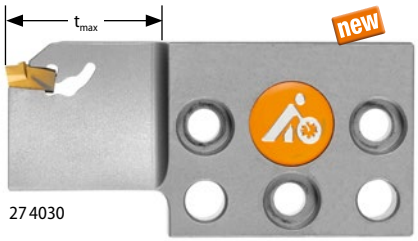
Medium-Plus blade carrier

For grooving inserts No. 275020 – 275026.

∅ range Groove D_1 / D_2	21U 27 4030	21U 27 4032	21U 27 4034	21U 27 4036	t_{max}
	Medium-Plus blade carrier for face grooving				27 4030 27 4032 / 27 4034 27 4036
mm	right-hand	left-hand	right-hand	right-hand	mm / mm
44/60	XXX	XXX	XXX	XXX	26 / 16
54/75	XXX	XXX	XXX	XXX	26 / 16
69/100	XXX	XXX	XXX	XXX	28 / 18
94/130	XXX	XXX	XXX	XXX	28 / 18
124/180	XXX	XXX	XXX	XXX	28 / 18
174/250	XXX	XXX	XXX	XXX	30 / 20
244/350	XXX	XXX	XXX	XXX	30 / 20
344/999	XXX	XXX	XXX	XXX	30 / 20
Groove width w mm	3	3	3	3	

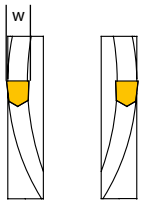
∅ range Groove D_1 / D_2	21U 27 4040	21U 27 4042	21U 27 4044	21U 27 4046	t_{max}
	Medium-Plus blade carrier for face grooving				27 4040 27 4042 / 27 4044 27 4046
mm	right-hand	right-hand	right-hand	right-hand	mm / mm
42/60	XXX	XXX	XXX	XXX	28 / 18
52/75	XXX	XXX	XXX	XXX	28 / 18
67/100	XXX	XXX	XXX	XXX	30 / 20
92/130	XXX	XXX	XXX	XXX	30 / 20
122/180	XXX	XXX	XXX	XXX	30 / 20
172/250	XXX	XXX	XXX	XXX	32 / 22
242/350	XXX	XXX	XXX	XXX	32 / 22
342/999	XXX	XXX	XXX	XXX	32 / 22
Groove width w mm	4	4	4	4	

∅ range Groove D_1 / D_2	21U 27 4050	21U 27 4052	t_{max}
	Medium-Plus blade carrier for face grooving		
mm	right-hand	right-hand	mm
35/60	XXX	XXX	25
50/75	XXX	XXX	25
65/100	XXX	XXX	25
90/130	XXX	XXX	25
120/180	XXX	XXX	25
170/250	XXX	XXX	25
240/350	XXX	XXX	25
340/999	XXX	XXX	25
Groove width w mm	5; 6	5; 6	



27 4030

27 4032



right-hand

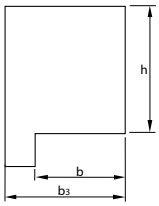
left-hand

Garant Holder for Medium / Medium-Plus blade carrier

Application: For blade carriers No. 274010 – 274052.

27 4002

Shank height h	mm	20	25	32	40	Assembly bolt	Dowel pins with plane surfaces	Dowel pin
21U 27 4002	Medium / Medium-Plus toolholder	XXX	XXX	XXX	XXX	279932 1	279934 1	279936 1
b	mm	18	18	28	–			
b_3	mm	30	30	40	40			
L_{tot}	mm	85						

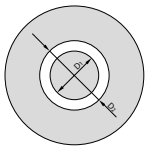


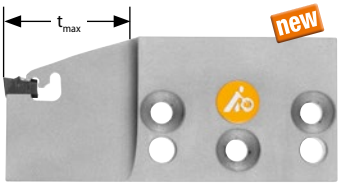
Garant Heavy-Duty blade carrier for face grooving

Application: In conjunction with toolholder No. 274004.

Attention: Without clamping screws (these are supplied with the toolholders).

Note: D_1 = minimum Ø for the first groove / D_2 = maximum Ø for the first groove.
Technology values should be reduced by 30 - 50 % depending on the clamping situation and material.
Please order the assembly key No. 279940 separately.



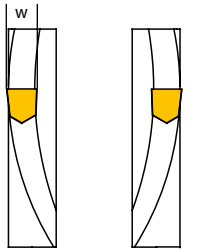


27 4060

27 4064

Ø range Groove D_1 / D_2	21U 27 4060	21U 27 4064	t_{max}
	Heavy-duty blade carrier for face grooving		
mm	right-hand	right-hand	mm
35/60	XXX	XXX	30
50/75	XXX	XXX	30
65/100	XXX	XXX	35
90/130	XXX	XXX	40
120/180	XXX	XXX	40
170/250	XXX	XXX	40
240/350	XXX	XXX	40
340/999	XXX	XXX	40
Groove width w mm	5; 6	5; 6	

Ø range Groove D_1 / D_2	21U 27 4070	21U 27 4072	21U 27 4074	21U 27 4076	t_{max}	
	Heavy-duty blade carrier for face grooving				27 4070 27 4072	27 4074 27 4076
mm	right-hand	right-hand	right-hand	right-hand	mm	mm
44/80	–	–	XXX	XXX	–	50
64/100	–	–	XXX	XXX	–	50
84/130	XXX	XXX	XXX	XXX	70	50
114/160	XXX	XXX	XXX	XXX	70	50
144/200	XXX	XXX	XXX	XXX	70	50
184/250	XXX	XXX	XXX	XXX	70	50
234/350	XXX	XXX	XXX	XXX	70	50
334/999	XXX	XXX	XXX	XXX	70	50
Groove width w mm	8	8	8	8		



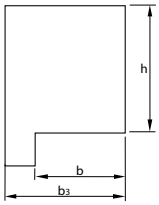
right-hand *left-hand*

Garant Holder for Heavy-Duty blade carrier

Application: For blade carriers No. 274060 – 274076.

27 4004

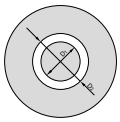
Shank height h	mm	25	32	40	50	Assembly bolt	Dowel pins with plane surfaces	Dowel pin
21U 27 4004	Heavy-duty toolholder	XXX	XXX	XXX	XXX	279932 2	279934 2	279936 2
b	mm	18	28	–	–			
b_3	mm	30	40	40	50			
L_{tot}	mm	140						

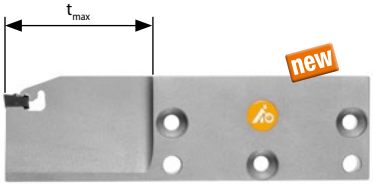


Garant Heavy-Duty-Plus blade carrier for face grooving

Application: In conjunction with toolholder No. 274006.
Attention: Without clamping screws (these are supplied with the toolholders).

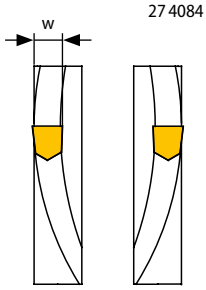
Note: D_1 = minimum ∅ for the first groove / D_2 = maximum ∅ for the first groove.
Technology values should be reduced by 30 - 50 % depending on the clamping situation and material.
Please order the assembly key No. 279940 2 separately.





27 4084

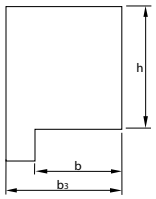
∅ range Groove D_1 / D_2	21U 27 4084	21U 27 4086	21U 27 4088	21U 27 4090	t_{max}	
	Heavy-Duty-Plus blade carrier for face grooving				27 4084 27 4086	27 4088 27 4090
mm	right-hand	left-hand	right-hand	left-hand	mm	mm
84/130	–	–	XXX	XXX	–	80
114/160	XXX	XXX	XXX	XXX	100	80
144/200	XXX	XXX	XXX	XXX	100	80
184/250	XXX	XXX	XXX	XXX	100	80
234/350	XXX	XXX	XXX	XXX	100	80
334/999	XXX	XXX	XXX	XXX	100	80
Groove width w mm	8	8	8	8		



Garant Holder for Heavy-Duty-Plus blade carrier

Application: For blade carriers No. 274084 – 274090.

Shank height h	mm	25	32	40	50	Assembly bolt	Dowel pins with plane surfaces	Dowel pin
21U 27 4006	Heavy-Duty-Plus toolholder	XXX	XXX	XXX	XXX	279932 2	279934 2	279936 2
b	mm	25	32	38	–			
b_3	mm	37	44	50	50			
L_{tot}	mm	220						



Garant Grooving inserts for face grooving

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 67 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	CuZn	Graphite GRP CRP	Uni					
ISO code	N	N	N	P	P	P	P	P	H	H	H	M	M	S	K	N	N						
27 5000/5020				140	120	100	80	50							80				●	●	●	●	
27 5003/5023				130	110	90	70	40				120	100						●	○		●	
27 5006/5026	380	360	280																●	○		●	

Medium grooving inserts

With ground flanks.
Application: For small groove ∅ in conjunction with blade carriers No. 274010 – 274026.

Groove width w		mm	3	4	
21H 27 5000	Grooving insert neutral	HB9035	XXX	XXX	10
21H 27 5003		HB9140	XXX	XXX	10
21H 27 5006		HU9310	XXX	XXX	10
Corner radius		mm	0.2		
Feed f in steel < 900 N/mm²		mm/rev.	0.1	0.12	

27 5000

27 5003

27 5006

Medium-Plus / Heavy-Duty / Heavy-Duty-Plus grooving inserts

Application: For blade carriers No. 274030 – 274090.

Groove width w		mm	3	4	5	6	8	
21H 27 5020	Grooving insert neutral	HB9035	XXX	XXX	XXX	XXX	XXX	10
21H 27 5023		HB9140	XXX	XXX	XXX	XXX	XXX	10
21H 27 5026		HU9310	XXX	XXX	XXX	XXX	XXX	10
Corner radius		mm	0.2	0.2	0.2	0.4	0.8	
Feed f in steel < 900 N/mm²		mm/rev.	0.1	0.12	0.15	0.17	0.19	

27 5020

27 5023

27 5026

Knurl forming tool

Knurl forming tool for 1 knurl

RAA 1×AA | RBL 1×BR | RBR 1×BL | RGE30° 1×GV30° | RGV30° 1×GE30°

Top face of the shank = tip height
Grub screw in the shank for clearance angle correction.
Carbide roller pin for increased wear resistance.
Click-Pin: For quick and easy changing of the knurl.
29 0004 – **Modular design: Can be used as a right-hand or left-hand version.**

29 0000_12

L R

29 0004_20

Shank size	29 0000	29 0001	29 0004	for knurl ∅ d_1	for knurl width w	for knurl bore ∅ d_2	Working range	Roller pin
	Knurl forming tool							
mm	right-hand	left-hand	universal	mm	mm	mm	mm	
12	XXX	XXX	–	10; 15	4	4	3 – 50	299910 1
16	XXX	XXX	–	10; 15	4	4	3 – 50	299910 2
20	–	–	XXX	20; 25	8	6	8 – 200	299910 4
25	–	–	XXX	20; 25	8	6	8 – 200	299910 4

Knurl forming tool for 2 knurls

RAA 2×AA | RGE30° BL/R30° | RGE45° BL/R45°

Grub screw in the shank for clearance angle correction.
Carbide roller pin for increased wear resistance.
29 0020 – ■ Working area can be extended by rotating the knurl carrier.
■ Exchangeable jaws (jaw set on request) for knurling up to the shoulder.
29 0010/0020 – **Modular design: Can be used as a right-hand or left-hand version.**
29 0018–0020 – ■ **Minimal pressure,** reduced stress on the tool and machine.
■ **Synchronising spindle** for easy adjustment of knurl carriers and centre heights.
29 0010 Size 20; 25 – **Click-Pin:** For quick and easy changing of the knurl.

Note:
29 0020 – Use of knurl ∅ 25 mm extends the working range to 0 - 65 mm.

L R

29 0010_12

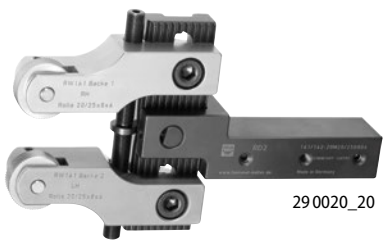
L R

29 0010_20

Shank size	29 0010	for knurl ∅ d_1	for knurl width w	for knurl bore ∅ d_2	Working range	Roller pin
	Knurl forming tool					
mm	universal	mm	mm	mm	mm	
12	XXX	10	4	4	3 – 12	299910 5
16	XXX	15	6	4	5 – 40	299910 6
20	XXX	20	8	6	10 – 80	299910 4
25	XXX	25	8	6	50 – 200	299910 4

29 0018_12

L R



29 0020_20

Shank size	29 0018	29 0019	29 0020	for knurl ∅ d_1	for knurl width w	for knurl bore ∅ d_2	Working range	Roller pin
	Knurl forming tool							
mm	right-hand	left-hand	universal	mm	mm	mm	mm	
12	XXX	XXX	–	15	4	4	0 – 15	299910 6
16	XXX	XXX	–	15	4	4	0 – 15	299910 6
20	–	–	XXX	20; 25	8	6	3.5 – 65	299910 3
25	–	–	XXX	20; 25	8	6	3.5 – 65	299910 3

Knurl forming tool set

29 0025_20

Shank / insert size	mm	12	16	20	25
29I **29 0025**	Knurl forming tool set	XXX	XXX	XXX	XXX
Content: 1 pc. each knurl forming tool No. 290000 and No. 290010		Size 12	Size 16	Size 20	Size 25
3 pc. each knurl No. 290161		Size 10×4/0.5; 10×4/0.6; 10×4/0.8	Size 15×4/0.6; 15×4/0.8; 15×4/1.0	Size 20×8/0.8; 20×8/1.0; 20×8/1.5	Size 25×8/0.8; 25×8/1.0; 25×8/1.5
1 pc. each knurl No. 290176 and No. 290181		Size 10×4/0.5; 10×4/0.6; 10×4/0.8	Size 15×4/0.6; 15×4/0.8; 15×4/1.0	Size 20×8/0.8; 20×8/1.0; 20×8/1.5	Size 25×8/0.8; 25×8/1.0; 25×8/1.5

ECO knurl forming tools

ECO knurl forming tool for 1 knurl

L R | RAA 1×AA | RBL 1×BR | RBR 1×BL | RGE30° 1×GV30° | RGV30° 1×GE30°

Used conventionally.

Note: Tip height must be adjusted.

29 0035

Shank size	29I **29 0035** ECO knurl forming tool **universal**	for knurl ∅ d_1	for knurl width w	for knurl bore ∅ d_2	Working range	Roller pin
mm		mm	mm	mm	mm	
8	XXX	15	4	4	3 – 20	299911 2
16	XXX	20	8	6	15 – 200	299911 1

ECO knurl forming tool for 2 knurls

RAA 2×AA | RGE30° BL/R30° | RGE45° BL/R45°

29 0040 – **Modular design: Can be used as a right-hand or left-hand version.**

L R

29 0040

Shank size	29I **29 0038** ECO knurl forming tool **right-hand**	29I **29 0040** ECO knurl forming tool **universal**	for knurl ∅ d_1	for knurl width w	for knurl bore ∅ d_2	Working range	Roller pin
mm			mm	mm	mm	mm	
12	XXX	–	15	4	4	8 – 15	299911 4
20	–	XXX	20	8	6	10 – 80	299911 3

ECO knurl forming tool set

29 0050

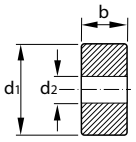
Type	mm	SET
29 0050	ECO knurl forming tool set	XXX
Content: 1 pc. each eco knurl forming tool No. 290035 and No. 290040		Size 16; 20
3 pc. knurl No. 290161		Size 20×8/0.8
2 pc. knurl No. 290161		Size 20×8/1.0
1 pc. each knurl No. 290176 and No. 290181		Size 20×8/0.8; 20×8/1.0; 20×8/1.2

Knurls with chamfer for knurl forming

Wear-resistant, of sintered metal.

Note: **Further sizes available on request.**

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	CuZn	Graphite GRP CRP					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	N	N					
29 0161–29 0199	70	35		60	45	30								50	25		65		●			●	●



Knurl Ø d_1 × knurl width b / pitch	29 0161	29 0176	29 0181	29 0186	29 0191	29 0196	29 0199	Knurl bore Ø d_2
	Knurl PM							
mm	AA	BL 30°	BR 30°	BL 45°	BR 45°	GE 30°	GV 30°	mm
10×4/0,5	XXX	XXX	XXX	XXX	XXX	XXX	XXX	4
10×4/0,6	XXX	XXX	XXX	XXX	XXX	XXX	XXX	4
10×4/0,8	XXX	XXX	XXX	XXX	XXX	XXX	XXX	4
10×4/1,0	XXX	XXX	XXX	XXX	XXX	XXX	XXX	4
15×4/0,5	XXX	XXX	XXX	XXX	XXX	XXX	XXX	4
15×4/0,6	XXX	XXX	XXX	XXX	XXX	XXX	XXX	4
15×4/0,8	XXX	XXX	XXX	XXX	XXX	XXX	XXX	4
15×4/1,0	XXX	XXX	XXX	XXX	XXX	XXX	XXX	4
15×6/1,0	XXX	XXX	XXX	XXX	XXX	XXX	XXX	4
20×8/0,5	XXX	XXX	XXX	XXX	XXX	XXX	XXX	6
20×8/0,6	XXX	XXX	XXX	XXX	XXX	XXX	XXX	6
20×8/0,8	XXX	XXX	XXX	XXX	XXX	XXX	XXX	6
20×8/1,0	XXX	XXX	XXX	XXX	XXX	XXX	XXX	6
20×8/1,2	XXX	XXX	XXX	XXX	XXX	XXX	XXX	6
20×8/1,5	XXX	XXX	XXX	XXX	XXX	XXX	XXX	6
25×8/1,0	XXX	XXX	XXX	XXX	XXX	–	XXX	6

Knurl forming tools for applications up to the collar

Grub screws in the shank for clearance angle correction.
Carbide roller pin for increased wear resistance.

Knurl forming tool for 1 knurl

RAA
1×AA

Top face of the shank = tip height

29 0084 – **Modular design: Can be used universally as right-hand or left-hand version.**

29 0084

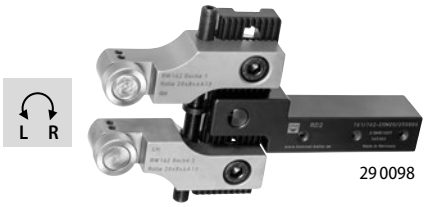
Shank size	291 29 0080	291 29 0084	for knurl Ø d_1	for knurl width w	for knurl bore Ø d_2	for knurled countersunk Ø d_3	Working range	Closure stud	Disc
	Knurl forming tool								
mm	right-hand	universal	mm	mm	mm	mm	mm		
12	XXX	–	15	6	6	11	3 – 50	299925 1	299927 1
16	XXX	–	15	6	6	11	3 – 50	299925 1	299927 1
20	–	XXX	20	8	6	13	8 – 200	299925 2	299927 2
25	–	XXX	20	8	6	13	8 – 200	299925 2	299927 2

Knurl forming tool for 2 knurls

RAA
2×AA

29 0098 – Working area can be extended by rotating the knurl carrier.
29 0090/0098 – **Modular design: Can be used universally as right-hand or left-hand version.**
29 0094/0098 – ■ **Minimal pressure,** reduced stress on the tool and machine.
■ **Synchronising spindle** for easy adjustment of knurl carriers and centre heights.

29 0090



29 0098

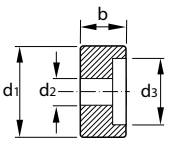
Shank size	291 29 0090	for knurl Ø d_1	for knurl width w	for knurl bore Ø d_2	for knurled countersunk Ø d_3	Working range	Closure stud	Disc
	Knurl forming tool							
mm	universal	mm	mm	mm	mm	mm		
16	XXX	15	6	6	11	6 – 60	299925 1	299927 1
20	XXX	20	8	6	13	10 – 100	299925 2	299927 2
25	XXX	20	8	6	13	10 – 100	299925 2	299927 2

Shank size	291 29 0094	291 29 0098	for knurl Ø d_1	for knurl width w	for knurl bore Ø d_2	for knurled countersunk Ø d_3	Working range	Closure stud	Disc
	Knurl forming tool								
mm	right-hand	universal	mm	mm	mm	mm	mm		
12	XXX	–	15	6	6	11	0 – 15	299925 1	299927 1
16	XXX	–	15	6	6	11	0 – 15	299925 1	299927 1
20	–	XXX	20	8	6	13	3.5 – 65	299925 2	299927 2
25	–	XXX	20	8	6	13	3.5 – 65	299925 2	299927 2

Knurls for knurl forming up to the collar

With 45° chamfer.
Wear-resistant powder metal.

Note: **Further sizes and profiles available on request.**



Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	CuZn	Graphite GRP CRP					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	N	N					
29 0150	70	35		60	45	30								50	25		65		●			●	●

Knurl Ø d_1 × knurl width w / pitch		mm	15×6/0,6	15×6/0,8	15×6/1,0	15×6/1,2	15×6/1,5	20×8/0,6	20×8/0,8	20×8/1,0	20×8/1,2	20×8/1,5
291 29 0150	Knurl PM	AA	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
Knurl bore Ø d_2		mm	6									
Knurled countersunk Ø d_3		mm	11	11	11	11	11	13	13	13	13	13

Cut knurling tools

Modular design: Can be used universally as right-hand or left-hand version.
Carbide running sleeve for increased wear resistance.
Quick tool adjustment by adjustment play.

Cut knurling tool for 1 knurl

Grub screw in the shank for clearance angle correction.
Size 20; 25 – 3-point contact for exact axial positioning.
Radial and axial rotational registration for optimum tool guidance.

29 0200_12

29 0200_20

Shank size	29 0200	for knurl ∅ d_1	for knurl width w	for knurl bore ∅ d_2	Working range	Carbide sleeve, cover disc, screw
	Cut knurling tool					
mm	**universal**	mm	mm	mm	mm	
12	XXX	15	4	8	3 – 50	299920 5
16	XXX	15	4	8	3 – 50	299920 5
20	XXX	25	6	8	10 – 300	299920 1
25	XXX	25	6	8	10 – 300	299920 1

Cut knurling tool for 2 knurls

Advantage:
- Low vibration.
- Adjustment scale and synchronous adjustment spindle for adjusting the workpiece ∅.
- Reduced set-up times leading to reduced unit costs.
- Clearance angle correction of the knurls.
- Increased wear resistance due to specially hardened surface.
- For higher feed rates and cutting speeds.

29 0210_12

29 0210_25

Shank size	29 0210	for knurl ∅ d_1	for knurl width w	for knurl bore ∅ d_2	Working range	Carbide sleeve, cover disc, screw
	Cut knurling tool					
mm	**universal**	mm	mm	mm	mm	
12	XXX	15	4	8	3 – 50	299920 5
16	XXX	15	4	8	3 – 50	299920 5
20	XXX	25	6	8	10 – 250	299920 1
25	XXX	25	6	8	10 – 250	299920 1

Cut knurling tool set

29 0219_12

29 0219_20

Shank size mm	12	16	20	25
29 0219 Cut knurling tool set	XXX	XXX	XXX	XXX
Content: 1 pc. each cut knurling tool No. 290200 and No. 290210	Size 12	Size 16	Size 20	Size 25
2 pc. each knurl No. 290261	Size 15×4/0.5; 15×4/0.6; 15×4/0.8	Size 15×4/0.6; 15×4/0.8; 15×4/1.0	Size 25×6/0.8; 25×6/1.0; 25×6/1.5	Size 25×6/0.8; 25×6/1.0; 25×6/1.5
1 pc. each knurl No. 290276 and No. 290281	Size 15×4/0.5; 15×4/0.6; 15×4/0.8	Size 15×4/0.6; 15×4/0.8; 15×4/1.0	Size 25×6/0.8; 25×6/1.0; 25×6/1.5	Size 25×6/0.8; 25×6/1.0; 25×6/1.5

ECO cut knurling tool

Grub screws in the shank for clearance angle correction.

ECO cut knurling tool for 1 knurl

RAA
1×BR30°

29 0230_12

29 0230_20

Shank size	29 0230	for knurl Ø d_1	for knurl width w	for knurl bore Ø d_2	Working range	Carbide sleeve, cover disc, screw
	ECO cut knurling tool					
mm	right-hand	mm	mm	mm	mm	
12	XXX	15	4	8	3 – 50	299920 3
16	XXX	15	4	8	3 – 50	299920 3
20	XXX	25	6	8	10 – 300	299920 2

ECO cut knurling tool for 2 knurls

RGE30°
2×AA

RGE45°
BL/R15°

29 0238_12

29 0241 – **Modular design: Can be used universally as right-hand or left-hand version.**
Adjustment of the production Ø using a scale.

L R

29 0241_20

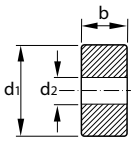
Shank size	29 0238	29 0241	for knurl Ø d_1	for knurl width w	for knurl bore Ø d_2	Working range	Carbide sleeve, cover disc, screw
	ECO cut knurling tool						
mm	right-hand	universal	mm	mm	mm	mm	
12	XXX	–	15	4	8	3 – 50	299920 4
16	XXX	–	15	4	8	3 – 50	299920 4
20	–	XXX	25	6	8	10 – 250	299920 1

Knurls without chamfer for cut knurling

Wear-resistant, of sintered metal.

Note:
- Size 21.5×5×8 suitable for Quick tools.
- **Further sizes available on request.**

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	CuZn	Graphite GRP CRP					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	S	N	N					
29 0261–29 0281	160	110		110	85	65								60	35		120		●			●	○

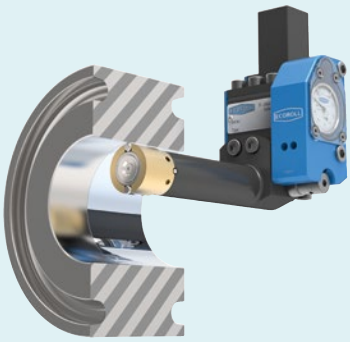


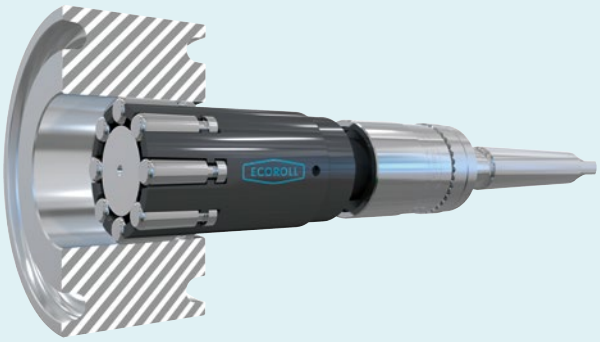
Knurl Ø d_1 × knurl width w / pitch	29 0261	29 0266	29 0271	29 0276	29 0281	Knurl bore Ø d_2
	Knurl PM					
mm	AA	BL 15°	BR 15°	BL 30°	BR 30°	mm
15×4/0,5	XXX	XXX	XXX	XXX	XXX	8
15×4/0,6	XXX	XXX	XXX	XXX	XXX	8
15×4/0,8	XXX	XXX	XXX	XXX	XXX	8
15×4/1,0	XXX	XXX	XXX	XXX	XXX	8
25×6/0,5	XXX	XXX	XXX	XXX	XXX	8
25×6/0,6	XXX	XXX	XXX	XXX	XXX	8
25×6/0,8	XXX	XXX	XXX	XXX	XXX	8
25×6/1,0	XXX	XXX	XXX	XXX	XXX	8
25×6/1,2	XXX	XXX	XXX	XXX	XXX	8
25×6/1,5	XXX	XXX	XXX	XXX	XXX	8
21,5×5/0,5	XXX	XXX	XXX	XXX	XXX	8
21,5×5/0,6	XXX	XXX	XXX	XXX	XXX	8
21,5×5/1,0	XXX	XXX	XXX	XXX	XXX	8

ECOROLL Smooth rolling

High-quality smooth surfaces – For external and internal machining

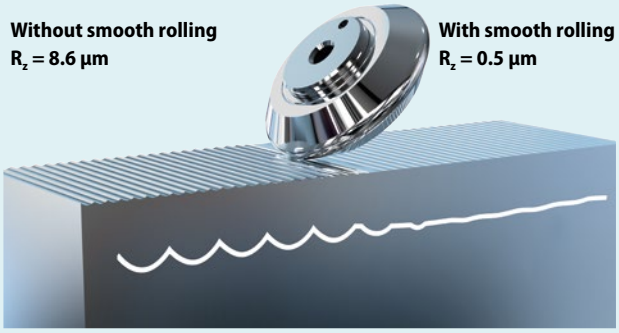
Smooth: Up to R_z < 1 µm is achievable!
Quick: Feed rate f up to 2.5 mm/rev (internal operation) and 1.0 mm/rev (external operation)!





Technology

Smooth rolling is a forming surface finishing process to reduce the surface roughness.
The roughness peaks of the machined surface are levelled by plastic deformation.
The pressure of the rolls produces a material flow into the interior, resulting in a compensation of the unevenness. The smoothing occurs through the flow of the entire near-surface layer of material.



Impressive advantages

- No additional production operations (grinding, honing, lapping).
- Reduction of set-up and production time.
- Extremely high surface quality (up to R_z < 1 µm achievable).
- Increased wear resistance of the component due to surface hardening.
- Safe and reliable process due to practically wear-free tool.
- Fast payback and lasting reduction in tooling costs.

Conditions

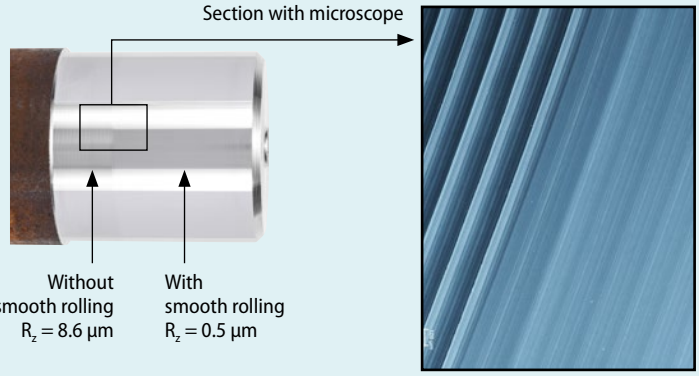
① Suitable for materials with a tensile strength up to 1400 N/mm² and a hardness up to 45 HRC.

② Before smooth rolling, a surface with an average surface roughness between R_z = 5 µm and R_z = 30 µm – is required, depending on the material.

③ Shape and position tolerances must be met. The change in ∅ is limited only to the µm range. The machine must be designed for tight tolerances. The reduction in ∅ corresponds to the reduction in R_z
(e.g. R_z 10 µm to R_z 1 µm ≙ ∅ – 9 µm).

Practical example with No. 29 1505_VDI30 (EG5)

Material:	42CrMo4
ap:	0.25 mm
f:	0.2 mm/rev
v:	125 m/min



Internal machining – done in seconds

Feed rates up to 2.4 mm/rev at R_z < 1.0 µm.
Example tool No. 29 1556_40.

L R

ECOROLL

Smooth rolling tool, single roller

For use on CNC and conventional lathes.
With symmetrical structure – can be used universally as right-hand or left-hand version.

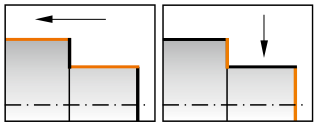
Advantage: Surface quality up to R_z < 1.0 µm.
Feed rates up to 1.0 mm/rev (external machining).

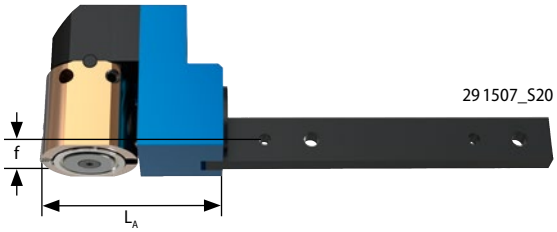
Application: For mechanical surface finishing.
For machining all metallic materials up to a tensile strength of 1400 N/mm² and a hardness of up to 45 HRC.

Note:
- Other shank connections on request.
- Detailed technology recommendations can be found in the instruction manual.

For cylindrical external or flat faces (recommended ∅ range 5-50 mm)

Application: For use on long lathes.





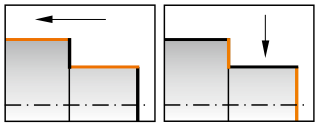
Shank mounting type		S10	S12	S16	S20
29F **29 1507**	Smooth rolling tool EG3T-3 **universal**	(XXX)	(XXX)	(XXX)	(XXX)
L_A	mm	110			
f	mm	5	6	8	10
maximum rolling force	kN	0.6			
Roll ∅	mm	3			
Shank square	mm	10×10	12×12	16×16	20×20
Suitable for: ∅ range (recommended)		5 – 50 mm			

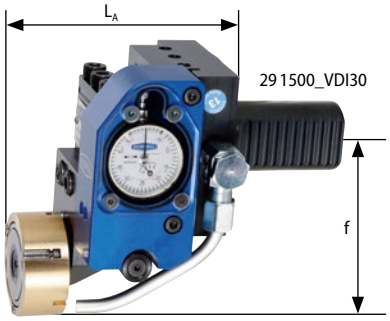
For cylindrical external or flat faces (recommended ∅ range 10-100 mm)

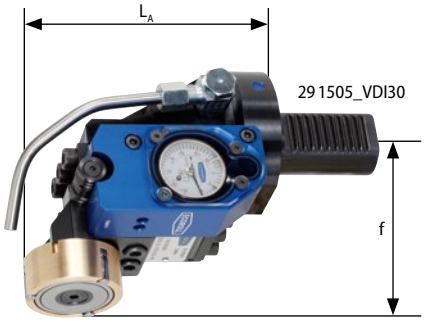
Advantage: Consistent results due to continuous measurement of the rolling force.

Supplied with: Two spare rolls built in the cage.

Note: The machined surface and tool are dependent on the type of turret (radial/disc) in each case.





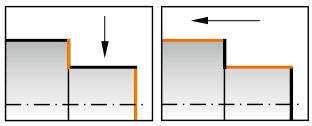


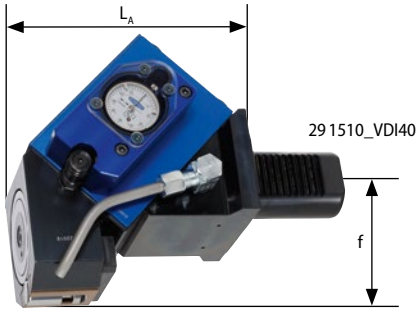
Shank mounting type		S20	S25	VDI20	VDI25	VDI30	VDI40
29F **29 1500**	Smooth rolling tool EG5 **universal**	(XXX)	(XXX)	(XXX)	(XXX)	(XXX)	(XXX)
29F **29 1505**		–	–	(XXX)	(XXX)	(XXX)	(XXX)
L_A (29 1500)	mm	69	69	83	83	83	83
L_A (29 1505)	mm	–	–	121	121	121	121
f (29 1500)	mm	93.1	102.1	78	78	78	78
f (29 1505)	mm	–	–	80	80	80	80
maximum rolling force	kN	3					
Roll ∅	mm	5					
Shank square	mm	20×20	25×25	–	–	–	–
Suitable for: ∅ range (recommended)		10 – 100 mm					

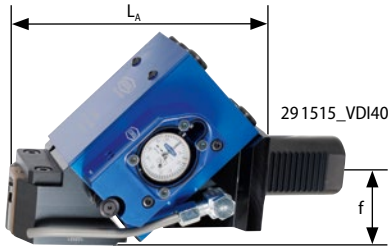
For cylindrical external or flat faces (recommended from Ø 50 mm)

Advantage: Consistent results due to continuous measurement of the rolling force.

Note: The machined surface and tool are dependent on the type of turret (radial/disc) in each case.







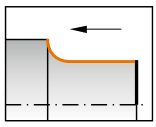
Shank mounting type			S25	S32	VDI40	VDI50	PSC63	PSC80
29F **29 1510**	Smooth rolling tool EG14 **universal**		(XXX)	(XXX)	(XXX)	(XXX)	–	–
29F **29 1515**			–	–	(XXX)	(XXX)	(XXX)	(XXX)
L_A (29 1510)		mm	132	132	131	131	–	–
L_A (29 1515)		mm	–	–	158.1	158.1	196	196
f (29 1510)		mm	103.6	103.6	71.3	71.3	–	–
f (29 1515)		mm	–	–	44	44	44	44
maximum rolling force		kN	8					
Roll Ø		mm	14					
Shank square		mm	25×25	32×32	–	–	–	–
Suitable for: Ø range (recommended)			from 50 mm					

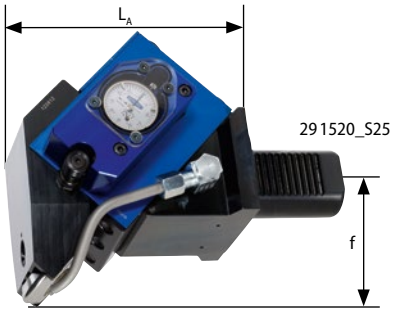
For external surfaces with transition radii

Advantage: Consistent results due to continuous measurement of the rolling force.

Recommendation: For external surfaces with subsequent radius up to plane surface.

Note: Roller radius = 2.5 mm. Machinable workpiece radii of 4 – 12 mm.





Shank mounting type			S25	S32	VDI40	VDI50	PSC63	PSC80
29F **29 1520**	Smooth rolling tool EG45-40M **universal**		(XXX)	(XXX)	(XXX)	(XXX)	(XXX)	(XXX)
L_A		mm	130	130	129	129	151	166.3
f		mm	101.1	101.1	69	69	69	69
maximum rolling force		kN	4					
Roll Ø		mm	40					
Shank square		mm	25×25	32×32	–	–	–	–
Suitable for: Ø range (recommended)			from 35 mm					

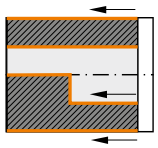
For external surfaces and holes

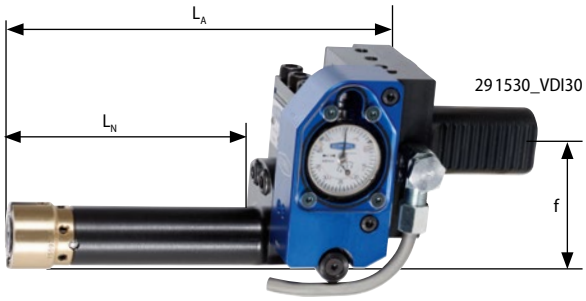
High flexibility due to external and internal use.
Independent of diameter (within the recommended range) for internal machining.

Advantage: Consistent results due to continuous measurement of the rolling force.

Application: For external Ø from 10 mm and internal Ø from 32 mm.

Supplied with: Two spare rolls built in the cage.





Shank mounting type			S20	S25	VDI20	VDI25	VDI30	VDI40
29F **29 1530**	Smooth rolling tool EGI5-32AI **universal**		(XXX)	(XXX)	(XXX)	(XXX)	(XXX)	(XXX)
L_A		mm	154	154	168	168	168	168
f		mm	73.2	82.2	58	58	58	58
L_N		mm	100					
maximum rolling force		kN	3					
Roll Ø		mm	5					
Shank square		mm	20×20	25×25	–	–	–	–
Suitable for: Ø range outside (recommended)			10 – 100 mm					
Ø range inside (recommended)			32 – 150 mm					

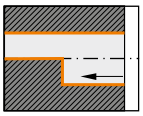
ECOROLL Smooth rolling tool, multi-roller

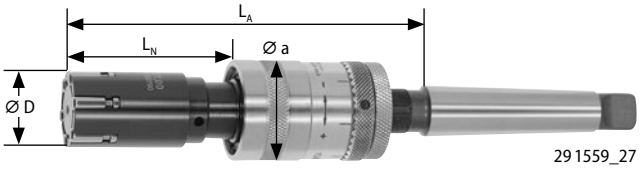
For use on CNC and conventional lathes, milling and drilling machines.
Stepless adjustment in µm (adjustment range from -0.05 to +0.1 mm).

Advantage: **Specially for production use.** Maximum productivity due to **feeds** from 0.05 - 0.3 mm **per roll**.
Surface quality up to R_z < 1.0 µm possible.
Automatic release during tool withdrawal avoids damage to smooth rolled surface.

Application:
- For mechanical surface finishing.
- For machining all metallic materials up to a tensile strength of 1400 N/mm² and a hardness of up to 45 HRC.
- Clockwise machining.
- Up to tolerance class IT8.
- For holes up to Ø 49 mm.

Note: From Ø 10 mm optionally with internal cooling.





29 1559_27

Ø D	29F 29 1550	29F 29 1553	29F 29 1556	29F 29 1559	29F 29 1562	L_A	L_N	Adjustment range	Ø a	Number of rolls
	Smooth rolling tool G									
	Parallel shank Ø 16 mm	Parallel shank Ø 20 mm	Parallel shank Ø 25 mm	MK2	MK3					
mm						mm	mm	mm	mm	
6	(XXX)	(XXX)	–	(XXX)	–	128	50	-0.05 / +0.1	35	3
7	(XXX)	(XXX)	–	(XXX)	–	128	50	-0.05 / +0.1	35	3
8	–	(XXX)	–	(XXX)	–	128	50	-0.05 / +0.1	35	4
9	–	(XXX)	–	(XXX)	–	128	50	-0.05 / +0.1	35	4
10	–	(XXX)	–	(XXX)	–	128	50	-0.05 / +0.1	35	4
11	–	(XXX)	–	(XXX)	–	128	50	-0.05 / +0.1	35	5
12	–	(XXX)	–	(XXX)	–	128	50	-0.05 / +0.1	35	5
13	–	(XXX)	–	(XXX)	–	128	50	-0.05 / +0.1	35	5
14	–	(XXX)	–	(XXX)	–	128	50	-0.05 / +0.1	35	5
15	–	(XXX)	–	(XXX)	–	128	50	-0.05 / +0.1	35	5
16	–	(XXX)	–	(XXX)	–	128	50	-0.05 / +0.1	35	5
17	–	(XXX)	–	(XXX)	–	128	50	-0.05 / +0.1	35	5
18	–	(XXX)	–	(XXX)	–	128	50	-0.05 / +0.1	35	5
19	–	(XXX)	–	(XXX)	–	128	50	-0.05 / +0.1	35	5
20	–	(XXX)	–	(XXX)	–	128	50	-0.05 / +0.1	35	5
21	–	(XXX)	–	(XXX)	–	128	50	-0.05 / +0.1	35	5
22	–	(XXX)	–	(XXX)	–	128	50	-0.05 / +0.1	35	5
23	–	(XXX)	–	(XXX)	–	128	50	-0.05 / +0.1	35	5
24	–	(XXX)	–	(XXX)	–	128	50	-0.05 / +0.1	35	5
25	–	(XXX)	–	(XXX)	–	128	50	-0.05 / +0.1	35	6
26	–	(XXX)	–	(XXX)	–	128	50	-0.05 / +0.1	35	6
27	–	(XXX)	–	(XXX)	–	128	50	-0.05 / +0.1	35	6
28	–	(XXX)	–	(XXX)	–	128	50	-0.05 / +0.1	35	6
29	–	(XXX)	–	(XXX)	–	128	50	-0.05 / +0.1	35	6
30	–	–	(XXX)	(XXX)	–	128	50	-0.05 / +0.1	35	6
31	–	–	(XXX)	(XXX)	–	128	50	-0.05 / +0.1	35	6
32	–	–	(XXX)	(XXX)	–	128	50	-0.05 / +0.1	35	6
33	–	–	(XXX)	–	(XXX)	153	75	-0.05 / +0.1	35	6
34	–	–	(XXX)	–	(XXX)	153	75	-0.05 / +0.1	35	6
35	–	–	(XXX)	–	(XXX)	153	75	-0.05 / +0.1	35	6
36	–	–	(XXX)	–	(XXX)	163	162	-0.05 / +0.1	35	6
37	–	–	(XXX)	–	(XXX)	163	162	-0.05 / +0.1	35	6
38	–	–	(XXX)	–	(XXX)	163	162	-0.05 / +0.1	35	8
39	–	–	(XXX)	–	(XXX)	163	162	-0.05 / +0.1	35	8
40	–	–	(XXX)	–	(XXX)	163	162	-0.05 / +0.1	35	8
41	–	–	(XXX)	–	(XXX)	163	162	-0.05 / +0.1	35	8
42	–	–	(XXX)	–	(XXX)	163	162	-0.05 / +0.1	35	8
43	–	–	(XXX)	–	(XXX)	163	162	-0.05 / +0.1	35	8
44	–	–	(XXX)	–	(XXX)	163	162	-0.05 / +0.1	35	8
45	–	–	(XXX)	–	(XXX)	163	162	-0.05 / +0.1	35	8
46	–	–	(XXX)	–	(XXX)	163	162	-0.05 / +0.1	35	8
47	–	–	(XXX)	–	(XXX)	163	162	-0.05 / +0.1	35	8
48	–	–	(XXX)	–	(XXX)	163	162	-0.05 / +0.1	35	8
49	–	–	(XXX)	–	(XXX)	163	162	-0.05 / +0.1	35	8

Smooth rolling rollers

Convex HSS smooth rolling rollers – type RRE.

29 1440 – Turned and polished (R_z 4 µm).
29 1442 – Ground (R_z 2– 3 µm).
29 1445 – Ground and polished (R_z 1 µm).

Advantage:
- Improved surface quality.
- Hardening of surfaces.
- Reduction of process time.

Application: For smooth rolling of cylindrical workpieces.

Roll ∅ mm	29 1440	29 1442	29 1445	Roller width mm	Roller hole ∅ mm	**Suitable for:** Knurl forming tool
	Smooth rolling roller, convex					
10	XXX	XXX	XXX	4	4	No. 290000; 290001
15	XXX	XXX	XXX	4	4	No. 290000; 290001
20	XXX	XXX	XXX	8	6	No. 290004
25	XXX	XXX	XXX	8	6	No. 290004

Smooth rolling with knurl forming holder

Achievable average values for surface quality:

Material with tensile strength of 300 – 850 N/mm².

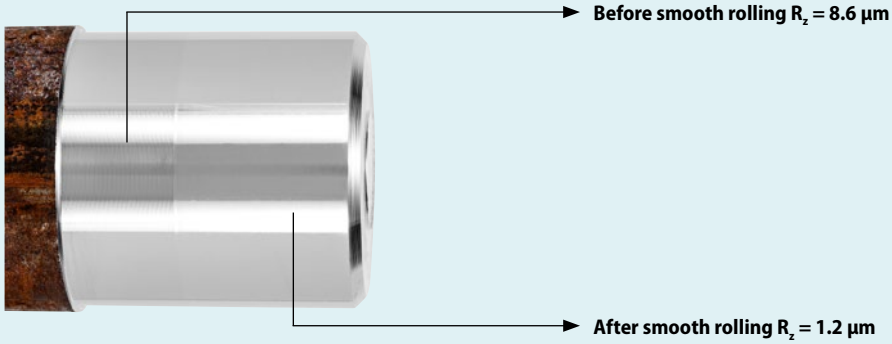
Smooth rolling roller No.	Achievable average: R_z in µm	
29 1440	2.3	●
29 1442	2.0	●
29 1445	1.5	●

Advantages of smooth rolling:

- After processing, smooth rolled components have low friction and increased corrosion resistance.
- Rework, such as grinding, honing and lapping can be replaced by a quick and easy smooth rolling process.
- Ensuring high process reliability.

Practical example with holder No. 29 0004 and smooth rolling roller No. 29 1445:

Material: 42CrM04 a_p: 0.02 mm f: 0.2 mm/rev v = 125 m/min



Labelling tool for labelling roller No. 42

Return spring system with replaceable segments.

Recommendation: Optionally, for secure storage of interchangeable segments/character sets, article No. 291990_box can be ordered.

Note:	Fitting at least 26 segments possible. The maximum number depends on the respective character width.

Labelling tool set

Suitable for: Interchangeable segments No. 291910 – 291912 and character sets No. 291905 – 291907.

Supplied with: Labelling tool with shank size 16,
shank adapter for shank sizes 20 and 25, start segment and end segment.

Note:	Range stock parts and for further versions available on request.

29 1900_20

Shank size	291 29 1900	for labelling rollers ∅	Roller pin
	Labelling tool set		
mm	**universal**	mm	
16-25	(XXX)	45	299911 5

Interchangeable segments

Suitable for: Labelling tool No. 291900.

29 1912_H

Symbol	291 29 1910 Character segment Character height 2 mm	291 29 1912 Character segment Character height 3 mm
A	(XXX)	(XXX)
B	(XXX)	(XXX)
C	(XXX)	(XXX)
D	(XXX)	(XXX)
E	(XXX)	(XXX)
F	(XXX)	(XXX)
G	(XXX)	(XXX)
H	(XXX)	(XXX)
I	(XXX)	(XXX)
J	(XXX)	(XXX)
K	(XXX)	(XXX)
L	(XXX)	(XXX)
M	(XXX)	(XXX)
Labelling rollers ∅ mm	45	45

Symbol	291 29 1910 Character segment Character height 2 mm	291 29 1912 Character segment Character height 3 mm
N	(XXX)	(XXX)
O	(XXX)	(XXX)
P	(XXX)	(XXX)
Q	(XXX)	(XXX)
R	(XXX)	(XXX)
S	(XXX)	(XXX)
T	(XXX)	(XXX)
U	(XXX)	(XXX)
V	(XXX)	(XXX)
W	(XXX)	(XXX)
X	(XXX)	(XXX)
Y	(XXX)	(XXX)
Z	(XXX)	(XXX)
Labelling rollers ∅ mm	45	45

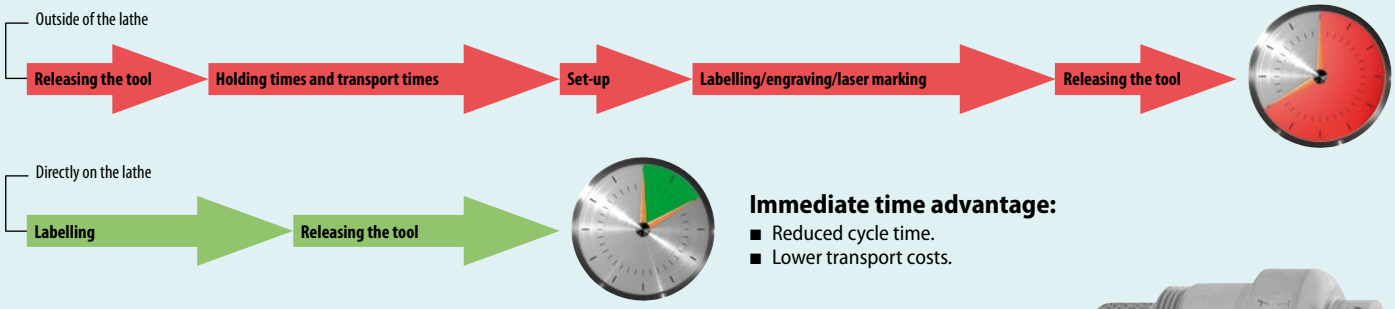
Symbol	291 29 1910 Character segment Character height 2 mm	291 29 1912 Character segment Character height 3 mm
0	(XXX)	(XXX)
1	(XXX)	(XXX)
2	(XXX)	(XXX)
3	(XXX)	(XXX)
4	(XXX)	(XXX)
5	(XXX)	(XXX)
6	(XXX)	(XXX)
7	(XXX)	(XXX)
8	(XXX)	(XXX)
9	(XXX)	(XXX)
.	(XXX)	(XXX)
-	(XXX)	(XXX)
/	(XXX)	(XXX)
Labelling rollers ∅ mm	45	45

Character sets

Suitable for: Labelling tool No. 291900.

Character height	291 29 1905 Letter set	291 29 1907 Set of numbers	**Content:** Character segments
mm	**A – Z**	**0 – 9**	
2	(XXX)	(XXX)	No. 291910
3	(XXX)	(XXX)	No. 291912

Labelling directly on the lathe. Faster than ever!



Immediate time advantage:

- Reduced cycle time.
- Lower transport costs.

Competent advice specially for your field of application:

- Preliminary information package obtainable directly in our eShop (No. 29 0299_Info).
- Ask for our special form for inquiries.

Practical example

Labelling tool for labelling roller No. 43

Return spring system with replaceable segments. Flexible and with adaptable shank.

Advantage: Labelling up to the collar is possible.

Recommendation: Optionally, for secure storage of interchangeable segments/character sets, article No. 291990_box can be ordered.

Note: The maximum number depends on the respective character width.
Labelling roller with ∅ 30 mm: Fitting at least 17 segments possible.
Labelling roller with ∅ 50 mm: Fitting at least 29 segments possible.

Labelling tool set

Suitable for:

29 1920/1925 – Interchangeable segments No. 291950 – 291952 and character sets No. 291940 – 291942.
29 1930/1935 – Interchangeable segments No. 291954 – 291956 and character sets No. 291945 – 291947.

Supplied with:

29 1920/1925 – Labelling tool with shank size 8, shank adapter for shank sizes 10, 12 and 16, start segment and end segment.
29 1930/1935 – Labelling tool with shank size 16, shank adapter for shank sizes 20 and 25, start segment and end segment.

Attention: Check that the combination of tools and segments in correct.

Note: Range stock parts and for further versions available on request.

Shank size	291 29 1920	291 29 1925	291 29 1930	291 29 1935	Screw
	Labelling tool set				
mm	right-hand	left-hand	right-hand	left-hand	
8-16	(XXX)	(XXX)	–	–	299923 1
16-25	–	–	(XXX)	(XXX)	299923 2
Labelling rollers ∅ mm	30	30	50	50	

29 1930

Interchangeable segments

Suitable for:

29 1950/1952 – Labelling tool No. 291920 and 291925.
29 1954/1956 – Labelling tool No. 291930 and 291935.

Attention: Observe assignment between tools and segments.

29 1952_G

29 1956_1

Symbol	291 29 1950	291 29 1952	291 29 1954	291 29 1956
	Character segment			
	Character height 2 mm	Character height 3 mm	Character height 2 mm	Character height 3 mm
A	(XXX)	(XXX)	(XXX)	(XXX)
B	(XXX)	(XXX)	(XXX)	(XXX)
C	(XXX)	(XXX)	(XXX)	(XXX)
D	(XXX)	(XXX)	(XXX)	(XXX)
E	(XXX)	(XXX)	(XXX)	(XXX)
F	(XXX)	(XXX)	(XXX)	(XXX)
G	(XXX)	(XXX)	(XXX)	(XXX)
H	(XXX)	(XXX)	(XXX)	(XXX)
I	(XXX)	(XXX)	(XXX)	(XXX)
J	(XXX)	(XXX)	(XXX)	(XXX)
K	(XXX)	(XXX)	(XXX)	(XXX)
L	(XXX)	(XXX)	(XXX)	(XXX)
M	(XXX)	(XXX)	(XXX)	(XXX)
N	(XXX)	(XXX)	(XXX)	(XXX)
O	(XXX)	(XXX)	(XXX)	(XXX)
P	(XXX)	(XXX)	(XXX)	(XXX)
Q	(XXX)	(XXX)	(XXX)	(XXX)
R	(XXX)	(XXX)	(XXX)	(XXX)
S	(XXX)	(XXX)	(XXX)	(XXX)
T	(XXX)	(XXX)	(XXX)	(XXX)
Labelling rollers ∅ mm	30	30	50	50

Symbol	291 29 1950	291 29 1952	291 29 1954	291 29 1956
	Character segment			
	Character height 2 mm	Character height 3 mm	Character height 2 mm	Character height 3 mm
U	(XXX)	(XXX)	(XXX)	(XXX)
V	(XXX)	(XXX)	(XXX)	(XXX)
W	(XXX)	(XXX)	(XXX)	(XXX)
X	(XXX)	(XXX)	(XXX)	(XXX)
Y	(XXX)	(XXX)	(XXX)	(XXX)
Z	(XXX)	(XXX)	(XXX)	(XXX)
0	(XXX)	(XXX)	(XXX)	(XXX)
1	(XXX)	(XXX)	(XXX)	(XXX)
2	(XXX)	(XXX)	(XXX)	(XXX)
3	(XXX)	(XXX)	(XXX)	(XXX)
4	(XXX)	(XXX)	(XXX)	(XXX)
5	(XXX)	(XXX)	(XXX)	(XXX)
6	(XXX)	(XXX)	(XXX)	(XXX)
7	(XXX)	(XXX)	(XXX)	(XXX)
8	(XXX)	(XXX)	(XXX)	(XXX)
9	(XXX)	(XXX)	(XXX)	(XXX)
.	(XXX)	(XXX)	(XXX)	(XXX)
-	(XXX)	(XXX)	(XXX)	(XXX)
/	(XXX)	(XXX)	(XXX)	(XXX)
Labelling rollers ∅ mm	30	30	50	50

Character sets

Suitable for:

29 1940/1942 – Labelling tool No. 291920 and 291925.
29 1945/1947 – Labelling tool No. 291930 and 291935.

Attention: Observe assignment between tools and segments.

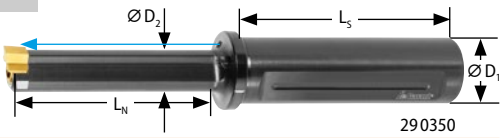
Character height	291 29 1940	291 29 1942	291 29 1945	291 29 1947	**Content:** Character segments	**Inhalt:** Zeichen-Segmente
	Letter set	Set of numbers	Letter set	Set of numbers	291940	291945
mm	A – Z	0 – 9	A – Z	0 – 9	291942	291947
2	(XXX)	(XXX)	(XXX)	(XXX)	291950	291954
3	(XXX)	(XXX)	(XXX)	(XXX)	291952	291956
Labelling rollers ∅ mm	30	30	50	50		

Keyway broaching toolholder

Attention: Always use the minimum pre-drill ∅ to match the slot width (e.g. for slot width 25 mm, minimum pre-drill ∅ = 48 mm).

Note:
- Individual holder sizes are for different slot widths. In such cases, where possible, always use the optimum combination of holder and cutting insert (identical size) for maximum stability.
- For lathes without Y-axis, please use eccentric bush No. 290391– 290393 for exact setting of the Y-coordinate.
- For machining centres, use the alignment aid No. 290397 and a dial indicator to check the spindle orientation.

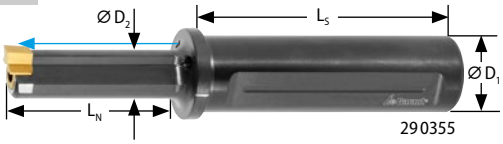
Keyway broaching toolholder, long



290350

from slot width m	21U 29 0350 / 21U 29 0353 Keyway broaching toolholder, long		suitable for slot width m	L_N	∅ D_2		Min. pre-drilling -∅ D_{min}	Screw
mm	∅ D_1 25 mm	∅ D_1 32 mm	mm	mm	mm	mm	mm	
2	XXX	XXX	2	34.5	6.5	3.5	7.3	290399 1
3	XXX	XXX	3	40	7.8	4.5	8.7	290399 1
4	XXX	XXX	4; 5	56	10	5.5	11; 12	290399 1
5	XXX	XXX	5	66	12	6.5	13	290399 1
6	XXX	XXX	6; 8	81	16	9	18; 19	290399 2
8	XXX	XXX	8	100	20	11	22	290399 2
10	XXX	XXX	10; 12	126	25	14	28; 29	290399 3
12	XXX	XXX	12	161	30	15.5	33	290399 3
14	XXX	XXX	14; 16	180	35	19	39; 39.5	290399 3
18	–	XXX	18; 20; 22; 25	200	40	22	45; 46; 47; 48	290399 4
L_S mm	90	100						

Standard keyway broaching toolholder

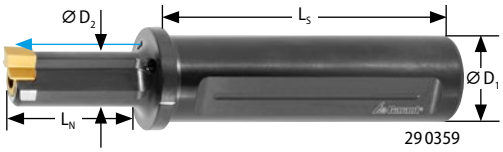


290355

from slot width m	21U 29 0356 / 21U 29 0354 / 21U 29 0355 / 21U 29 0358 Standard keyway broaching toolholder				suitable for slot width m	L_N	∅ D_2		Min. pre-drilling -∅ D_{min}	Screw
mm	∅ D_1 16 mm	∅ D_1 20 mm	∅ D_1 25 mm	∅ D_1 32 mm	mm	mm	mm	mm	mm	
2	XXX	XXX	XXX	XXX	2	25	6.5	3.5	7.3	290399 1
3	XXX	XXX	XXX	XXX	3	30	7.8	4.5	8.7	290399 1
4	XXX	XXX	XXX	XXX	4; 5	40	10	5.5	11; 12	290399 1
5	XXX	XXX	XXX	XXX	5	46	12	6.5	13	290399 1
6	XXX	XXX	XXX	XXX	6; 8	56	16	9	18; 19	290399 2
8	–	XXX	XXX	XXX	8	68	20	11	22	290399 2
10	–	–	XXX	XXX	10; 12	86	25	14	28; 29	290399 3
12	–	–	XXX	XXX	12	104	30	15.5	33	290399 3
14	–	–	XXX	XXX	14; 16	126	35	19	39; 39.5	290399 3
18	–	–	–	XXX	18; 20; 22; 25	140	40	22	45; 46; 47; 48	290399 4
L_S mm	40	50	90	100						

Keyway broaching toolholder, short and for keyway broaching equipment

290351



290359

from slot width m	21U 29 0357 / 21U 29 0359 Short keyway broaching toolholder		21U 29 0351 / 21U 29 0352 Keyway broaching toolholder for keyway broaching equipment		suitable for slot width m	L_N		∅ D_2		Min. pre-drilling -∅ D_{min}	Screw
						29 0357 29 0359	29 0351 29 0352				
mm	∅ D_1 16 mm	∅ D_1 20 mm	Shank EWS + Benz	Shank WTO	mm	mm	mm	mm	mm	mm	
2	XXX	XXX	XXX	XXX	2	17.5	25	6.5	3.5	7.3	290399 1
3	XXX	XXX	XXX	XXX	3	21	28	7.8	4.5	8.7	290399 1
4	XXX	XXX	XXX	XXX	4; 5	28	37	10	5.5	11; 12	290399 1
5	XXX	XXX	XXX	XXX	5	33	37	12	6.5	13	290399 1
6	XXX	XXX	XXX	XXX	6; 8	39	37	16	9	18; 19	290399 2
8	–	XXX	XXX	XXX	8	48	37	20	11	22	290399 2
10	–	–	XXX	XXX	10; 12	–	37	25	14	28; 29	290399 3
L_S mm	40	50	30	6							

Garant Cutting inserts for keyway broaching toolholder

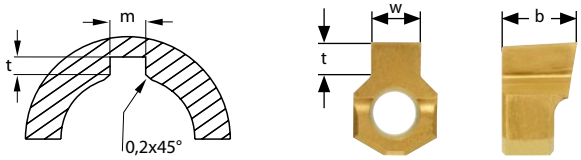
With TiN coating.
Suitable for regrinding.

Application: For producing slots according to DIN 6885, DIN 138 and factory standards.
For slot widths with tolerance JS9, use cutter inserts with tolerance H7.

Note:
- Special sizes (slot widths) available on request.
- From slot width 16 mm it is essential to perform two passes. The first pass must be performed for approx. half the slot width (e.g. 10 mm for a desired slot width of 18 mm).
- Application values can be found in the info block on page 773.

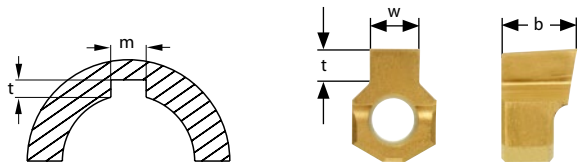
Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	CuZn	Graphite GRP CRP					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	M	M	S	K	N	N					
29 0360–29 0379	●	●	●	●	●	●	●	○					●	○	○	●	●	○	●	●			

Cutting insert with chamfer



for slot width m	21U 29 0360	21U 29 0363	Blade width w		Groove depth t	Tip thickness b
	Cutting insert					
	P9	H7	29 0360	29 0363		
mm	TiN	TiN	mm	mm	mm	mm
2	XXX	XXX	1.994	2.01	1.09	6.5
3	XXX	XXX	2.994	3.01	1.42	6.5
4	XXX	XXX	3.988	4.012	2.07	7
5	XXX	XXX	4.988	5.012	2.74	7
6	XXX	XXX	5.988	6.012	3	9
8	XXX	XXX	7.985	8.015	3.78	9
10	XXX	XXX	9.985	10.015	3.88	14
12	XXX	XXX	11.982	12.018	3.89	14
14	XXX	XXX	13.982	14.018	4.71	14
16	XXX	XXX	15.982	16.018	5.53	14
18	XXX	XXX	17.982	18.018	5.67	18
20	XXX	XXX	19.978	20.021	6.29	18
22	XXX	XXX	21.978	22.021	6.79	18
25	XXX	XXX	24.978	25.021	7.02	18
Chamfer	0.2 mm×45°	0.2 mm×45°				

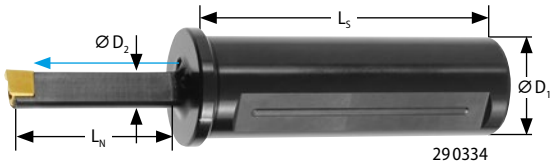
Cutting insert without chamfer



for slot width m	21U 29 0370	21U 29 0373	21U 29 0376	21U 29 0379	Blade width w				Groove depth t	Tip thickness b
	Cutting insert									
	P9	H7	D10	C11	29 0370	29 0373	29 0376	29 0379		
mm	TiN	TiN	TiN	TiN	mm	mm	mm	mm	mm	mm
2	XXX	XXX	XXX	XXX	1.994	2.01	2.06	2.12	1.3	6.5
3	XXX	XXX	XXX	XXX	2.994	3.01	3.06	3.12	2	6.5
4	XXX	XXX	XXX	XXX	3.988	4.012	4.078	4.145	2.6	7
5	XXX	XXX	XXX	XXX	4.988	5.012	5.078	5.145	3	7
6	XXX	XXX	XXX	XXX	5.988	6.012	6.078	6.145	4	9
8	XXX	XXX	XXX	XXX	7.985	8.015	8.098	8.17	4.5	9
10	XXX	XXX	XXX	XXX	9.985	10.015	10.098	10.17	6	14
12	XXX	XXX	XXX	XXX	11.982	12.018	12.12	12.205	6.5	14
14	XXX	XXX	XXX	XXX	13.982	14.018	14.12	14.205	7	14
16	XXX	XXX	XXX	XXX	15.982	16.018	16.12	16.205	8	14
18	XXX	XXX	XXX	XXX	17.982	18.018	18.12	18.205	9	18
20	XXX	XXX	XXX	XXX	19.978	20.021	20.149	20.24	10	18
22	XXX	XXX	XXX	XXX	21.978	22.021	22.149	22.24	11	18
25	XXX	XXX	XXX	XXX	24.978	25.021	25.149	25.24	12	18

Garant Profile slotting toolholders

Note:
- For machining centres, use the alignment aid No. 290397 and a dial indicator to check the spindle orientation.
- For lathes without Y-axis, please use eccentric bush No. 290391– 290393 for exact setting of the Y-coordinate.



290334

from square	21U 29 0330	21U 29 0332	21U 29 0334	suitable for square drive	L_N	Ø D_2		Min. pre-drilling -Ø D_{min}	Screw
	Profile slotting toolholder for square cutting inserts								
mm	Ø D_1 20 mm	Ø D_1 25 mm	Ø D_1 32 mm	mm	mm	mm	mm	mm	
8	XXX	XXX	XXX	8 – 10	30	8	4	8.2	290399 1
10	XXX	XXX	XXX	10 – 13	40	10	4.8	10.2	290399 1
14	XXX	XXX	XXX	14 – 16	50	13	7	14.2	290399 2
17	XXX	XXX	XXX	17 – 19	52	16	8.5	17.2	290399 3
19	–	XXX	XXX	19 – 27	89	18	10.25	19.5	290399 3
27	–	XXX	XXX	27 – 37	100	25	14.5	27.5	290399 3
38	–	–	XXX	38 – 50	140	35	20.5	38.5	290399 3
L_S mm	50	90	100						

from hexagon	21U 29 0340	21U 29 0342	21U 29 0344	suitable for hexagon drive	L_N	Ø D_2		Min. pre-drilling -Ø D_{min}	Screw
	Profile slotting toolholder for hexagon cutting inserts								
mm	Ø D_1 20 mm	Ø D_1 25 mm	Ø D_1 32 mm	mm	mm	mm	mm	mm	
9	XXX	XXX	XXX	9 – 11	30	8	4.5	9	290399 1
11	XXX	XXX	XXX	11 – 17	40	10	5.5	11	290399 1
17	XXX	XXX	XXX	17 – 28	56	15	8.5	17	290399 2
28	–	XXX	XXX	28 – 37	89	25	14	28	290399 3
37	–	XXX	XXX	37 – 45	126	35	19.5	37.2	290399 3
45	–	–	XXX	45 – 70	140	40	23	45	290399 4
L_S mm	50	90	100						

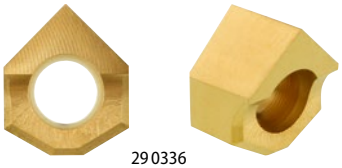
Garant Profile cutting inserts

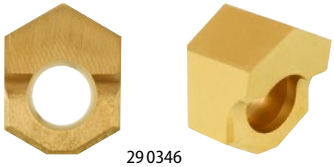
With TiN coating.
Suitable for regrinding.

Suitable for: 290336– Profile slotting toolholder No. 290330– 290334.
290346– Profile slotting toolholder No. 290340– 290344.

Note:
- Profile cutting inserts can be used for a square or hexagonal range (see product table).
- Application values can be found in the info block on page 773.

	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	INOX < 900 N	INOX > 900 N	Ti > 850 N	GG(G)	CuZn	Graphite GRP CRP					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	M	M	S	K	N	N					
290336/0346	●	●	●	●	●	●	●	○					●	○	○	●	●	○	●	●			


290336


290346

from square	21U 29 0336	suitable for square drive
	Profile cutting inserts	
mm	Square	mm
8	XXX	8 – 10
10	XXX	10 – 13
14	XXX	14 – 16
17	XXX	17 – 19
19	XXX	19 – 27
27	XXX	27 – 37
38	XXX	38 – 50

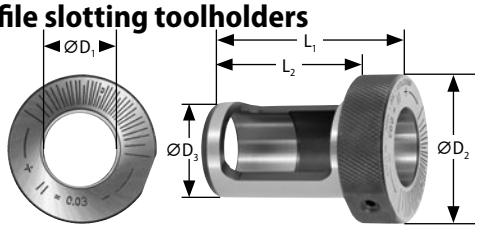
from hexagon	21U 29 0346	suitable for hexagon drive
	Profile cutting inserts	
mm	Hexagon	mm
9	XXX	9 – 11
11	XXX	11 – 17
17	XXX	17 – 28
28	XXX	28 – 37
37	XXX	37 – 45
45	XXX	45 – 70

Garant Eccentric bush for keyway broaching toolholders and profile slotting toolholders

With adjustment range from a maximum of ± 0.5 mm.
A graduation on the scale corresponds to 0.03 mm.

Suitable for: Groove slotting toolholders and profile slotting toolholders No. 290330 – 290358.

Application: For fine adjustment of groove slotting toolholders and profile slotting toolholders on lathes without a Y axis.

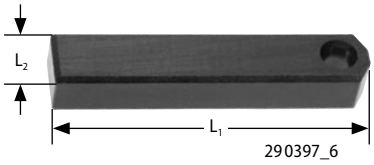


ØD3 H7	mm	25	32	32L	40	40L	50	50L	60	60L	for Ø D1 mm
21U 29 0391	Eccentric bush	XXX	XXX	XXX	–	–	–	–	–	–	20
21U 29 0392		–	XXX	XXX	XXX	–	–	–	–	–	25
21U 29 0393		–	–	–	XXX	XXX	XXX	XXX	XXX	XXX	32
Ø D2	mm	40	48	48	55	55	65	65	80	80	
L1 (29 0391, 29 0393)	mm	50	50	70	80	95	95	115	105	115	
L1 (29 0392)	mm	–	65	85	80	–	–	–	–	–	
L2 (29 0391, 29 0393)	mm	40	40	60	65	80	80	100	80	100	
L2 (29 0392)	mm	–	50	70	65	–	–	–	–	–	

Garant Alignment aid for machining centres

Suitable for: Keyway broaching and profile slotting toolholders No. 290330 – 290358.

Application: For checking the spindle orientation using a dial indicator.



Type		2	3	6	10	14	18
21U 29 0397	Alignment aid for machining centres	XXX	XXX	XXX	XXX	XXX	XXX
L1	mm	50	50	50	60	70	70
L2	mm	5	6.08	10.08	13.1	18	26
Suitable for: Profile slotting toolholders No. 290330 – 290334		–	Size 8; 10	Size 14; 17	Size 19	Size 27	Size 38
Profile slotting toolholders No. 290340 – 290344		–	Size 9; 11	Size 17	Size 28	Size 37	Size 45
Keyway broaching toolholders No. 290350 – 290358		Size 2	Size 3; 4; 5	Size 6; 8	Size 10; 12	Size 14	Size 18

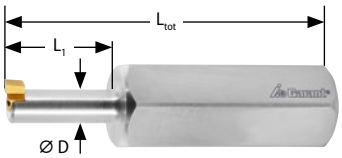
Garant Regrinding toolholder for cutting inserts

Made of aluminium with handy hexagon shank for easy use.

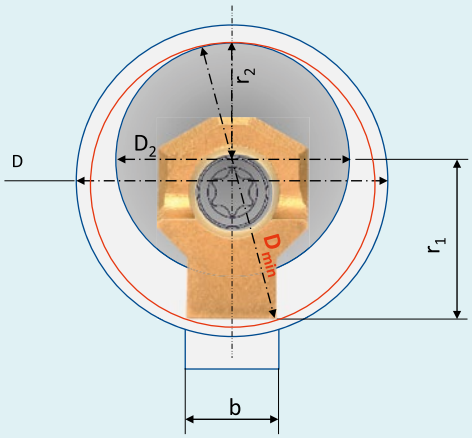
Suitable for: Cutting inserts No. 290336 – 290379.

Application: For safe and easy regrinding of the cutting inserts with an oilstone.

Type	21U 29 0398 Regrinding toolholder	Ltot mm	L1 mm	Ø D2 mm	Suitable for: Cutting insert No. 290360 – 290379	Cutting insert No. 290336	Cutting insert No. 290346
2	XXX	150	50	10	Size 2	–	–
3-5	XXX	150	50	12	Size 3 - 5	Size 8; 10	Size 9; 11
6-8	XXX	150	50	15	Size 6 - 8	Size 14; 17	Size 17
10-12	XXX	150	50	20	Size 10 - 12	Size 19	Size 28
14-16	XXX	150	50	25	Size 14 - 16	Size 27	Size 37
18-25	XXX	150	50	32	Size 18 - 25	Size 38	Size 45



Garant Keyway broaching and profile slotting – technical instructions



Standard application values:

	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	INOX < 900 N	INOX > 900 N	GG(G)	CuZn
	N	N	N	P	P	P	P	P	M	M	K	N
v_f mm/min	8000	8000	8000	10000	8000	6000	6000	6000	5000	5000	5000	7000
a_p mm	0.20	0.20	0.20	0.20	0.11	0.08	0.08	0.08	0.06	0.05	0.13	0.10

Formula for calculating Dmin:

$$D_{min} = \sqrt{{r_1}^2 + \left(\frac{b}{2}\right)^2} + r_2$$

HSS

duMONT Push broaches sets

Set of push broaches **HSS** No. 290405 including the necessary shims No. 290410 and guide bushes No. 290415. Supplied in a high-quality sturdy wooden case for secure and clear storage.

Note:
- Fits P9 and H9 available ex stock at a 15 % additional charge.
- Sets of push broaches for single pass use on request.
- BROACHING PRESSES can be found in Volume 2 (Hand tools and Measuring tools).

Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	GG(G)	CuZn	Graphite GRP CRP					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	K	N	N					
29 0400	○	●	○	●	●	○								○		●	●	○	●				

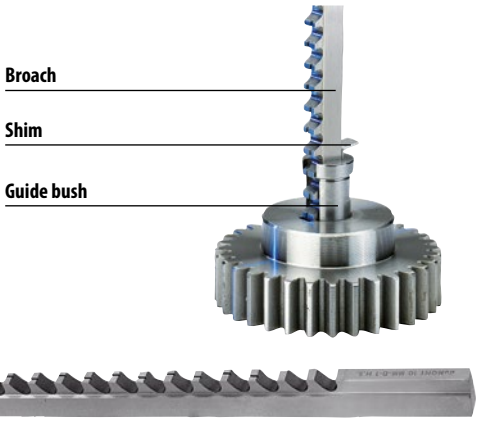
Type		2-3	4-8	10-14	16-18	20-25
29J 29 0400	Push broach set HSS, complete in a wooden case **Fit JS9**	XXX	XXX	XXX	(XXX)	(XXX)
Content: 1× each broach 290405		2A; 3A	4B1; 5B1; 6C1; 8C1	10D1; 12D1; 14D1	16E1; 18E1	20F1; 22F1; 25F1
1× each guide bush No. 290415		Type A: 6; 8; 10	Type B1: 12; 14; 15; 16; Type C1: 18; 19; 20; 22; 24; 25; 26; 28; 30	Type D1: 32; 34; 35; 36; 38; 40; 42; 44; 45; 46; 48; 50	Type E1: 52; 54; 55; 56; 58; 60; 62; 65	Type F1: 70; 75; 80; 85; 90; 95

duMONT Keyway push broaches for one-off and series production

HSS

Application: **For production of keyways to DIN 6885.**
Supplied with: Broaches including the necessary shims.

Note:
- Broaches for high tensile materials, increased number of passes or special applications available (on request).
- After first and second of three passes, back the broach off slightly – the broach will then align itself.
- Coated broaches and **inch size** broaches available on request.
- BROACHING PRESSES can be found in Volume 2 (Hand tools and metrology).
- Size 28; 32 and 36 available on request, on short lead times.



Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	GG(G)	CuZn	Graphite GRP CRP					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	K	N	N					
29 0405	○	●	○	●	●	○								○		●	●	○	●				

Type	29J 29 0405 Splined push broach HSS Fit JS9	29J 29 0406 Fit P9	29J 29 0407 Fit H9	Broach length mm	Keyway width mm	Keyway depth mm	for bore ∅ to DIN 6885 mm	Broaching length in steel mm	necessary broaching force for St50 and max. broaching length kg	Back width mm	Number of passes
2A	XXX	(XXX)	(XXX)	127	2	1	6 – 8	6 – 30	350	3.25	1
3A	XXX	(XXX)	(XXX)	127	3	1.4	8 – 10	6 – 30	300	3.25	2
4B1	XXX	(XXX)	(XXX)	172	4	1.8	11 – 12	8 – 42	550	6.46	2
5B1	XXX	(XXX)	(XXX)	172	5	2.3	12 – 17	8 – 42	850	6.46	2
6C1	XXX	(XXX)	(XXX)	299	6	2.8	18 – 22	10 – 64	1000	9.63	2
8C1	XXX	(XXX)	(XXX)	299	8	3.3	22 – 30	10 – 64	1700	9.63	3
10D1	XXX	(XXX)	(XXX)	353	10	3.3	30 – 38	25 – 150	2950	14.39	3
12D1	XXX	(XXX)	(XXX)	353	12	3.3	38 – 44	25 – 150	3800	14.39	3
14D1	XXX	(XXX)	(XXX)	353	14	3.8	44 – 50	25 – 150	5050	14.39	3
16E1	XXX	(XXX)	(XXX)	394	16	4.3	50 – 58	25 – 150	4300	19.34	4
18E1	XXX	(XXX)	(XXX)	394	18	4.4	58 – 65	25 – 150	4800	19.34	4
20F1	XXX	(XXX)	(XXX)	505	20	4.9	65 – 75	25 – 150	4000	25.72	4
22F1	XXX	(XXX)	(XXX)	505	22	5.4	75 – 85	25 – 150	4300	25.72	5
25F1	XXX	(XXX)	(XXX)	505	25	5.4	85 – 95	25 – 150	8300	25.72	5

Shims for broaches

Type		3A	4B1	5B1	6C1	8C1	10-12D1	14D1	16-18E1	20F1	22-25F1
29J 29 0410	Shim for push broach No. 290405 – 407	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX

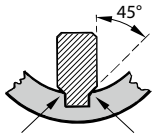
HSS

duMONT Keyway push broaches for a single pass

Sizes 4B1 to 8C1 additionally with 45° edge breaker.
This deburrs the sharp edges of the groove.

Application: For efficient cutting of splines to DIN 6885 in a single pass.

Note:
- **For size 2A please use part No. 290405 2A.**
- Fits P9 and H9 available on request.
- After 1/3 and 2/3 of the pass, back the broach off slightly – the broach will then align itself.



Suitable for/ v_c [m/min]	Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	< 55 HRC	< 60 HRC	< 65 HRC	< 67 HRC	< 70 HRC	INOX < 900 N	INOX > 900 N	GG(G)	CuZn	Graphite GRP CRP					
ISO code	N	N	N	P	P	P	P	P	H	H	H	H	H	M	M	K	N	N					
29 0420	○	●	○	●	●	○								○		●	●	○	●				

Type	29J 29 0420 Keyway push broach HSS Fit JS9	Broach length	Keyway width	Keyway depth	for bore ∅ to DIN 6885	Broaching length in steel	necessary broaching force for St50 and max. broaching length	Back width
		mm	mm	mm	mm	mm	kg	mm
3A	XXX	197	3	1.4	8 – 10	6 – 25	400	3.25
4B1	(XXX)	273	4	1.8	11 – 12	8 – 40	450	6.46
5B1	XXX	273	5	2.3	12 – 17	8 – 40	600	6.46
6C1	XXX	432	6	2.8	17 – 22	8 – 50	700	9.63
8C1	XXX	470	8	3.3	22 – 30	8 – 50	1100	9.63

duMONT Guide bushes for keyway push broaches

Size 6A–22C1 – With collar.
Size 24C1–90F1 – Without collar.

Application: **Push broaches with identification mark A and guide bushes with identification mark A should be used together.**
The same applies to the other markings. So that the broach can run through to its full height and can drop back again freely, the guide bush must be inserted into the press bedplate at the same time as the workpiece is threaded through.

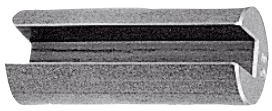
Note: Further sizes available on request.

Bush ∅	29J 29 0415 Guide bush for bore H7	Slot width	Length
mm		mm	mm
6A	XXX	3.25	32
8A	XXX	3.25	32
9A	XXX	3.25	32
10A	XXX	3.25	32
11B1	XXX	6.46	43
12B1	XXX	6.46	43
13B1	XXX	6.46	43
14B1	XXX	6.46	43
15B1	XXX	6.46	43
16B1	XXX	6.46	43
17B1	XXX	6.46	43
18C1	XXX	9.63	64
19C1	XXX	9.63	64
20C1	XXX	9.63	64
22C1	XXX	9.63	64
24C1	XXX	9.63	64
25C1	XXX	9.63	64

Bush ∅	29J 29 0415 Guide bush for bore H7	Slot width	Length
mm		mm	mm
28C1	XXX	9.63	64
30C1	XXX	9.63	64
32D1	XXX	14.39	100
35D1	XXX	14.39	100
36D1	XXX	14.39	100
38D1	XXX	14.39	100
40D1	XXX	14.39	100
45D1	XXX	14.39	125
50D1	XXX	14.39	125
55E1	XXX	19.34	150
60E1	XXX	19.34	150
65E1	XXX	19.34	150
70F1	XXX	25.72	150
75F1	XXX	25.72	150
80F1	XXX	25.72	150
90F1	XXX	25.72	150

29 0415

Guide bushes with collar from 6 – 22 mm ∅.

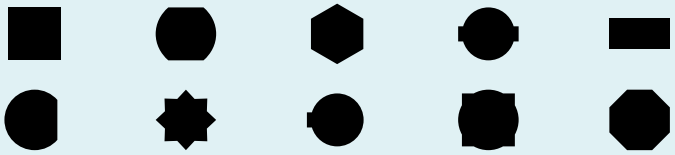


29 0415

Guide bushes from 24 – 90 mm ∅.

Special broaches – ask for our questionnaire!

Examples of profiles for special push broaches:



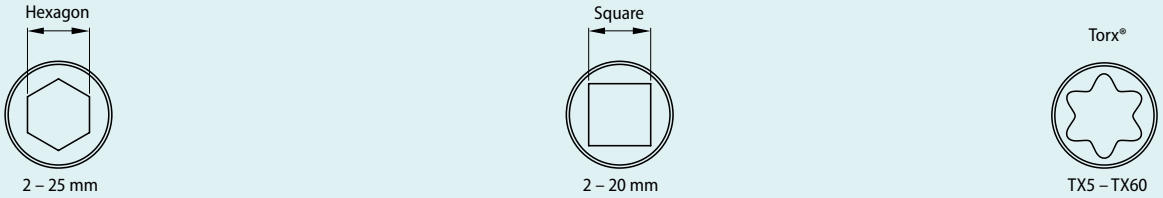
Square and hexagonal push broaches are available from our suppliers on short lead times.

We will be happy to prepare a quotation for you.

Garant® Profile broaching (tumbling)

Hexagon, square and Torx® profiles – created in seconds!

Large variety of holders and slotting tools available ex stock.



Technology

Concentric movement (tumbling) of the profile broach quickly creates the desired profile in a single pass, with good process reliability.

Impressive advantages

- Quick generation of profiles in a single pass.
- Due to the collar, very stable seating of the slotting tool in the toolholder.
- No additional set-up costs or subcontracting necessary.
- Addition toolholder mountings and special profiles available on request.

Processing

1. Preparation of the bore

For protection of the cutting edge and reduction in the processing time, always choose the bore as large as bore.
Recessing the bore facilitates the centring of the slotting tool (recess Ø corresponds to the minimum outer Ø of the profile).
For larger bore diameters the bore contour remains easily visible on the faces.
This has no technical or qualitative disadvantages for the functionality of the profile.

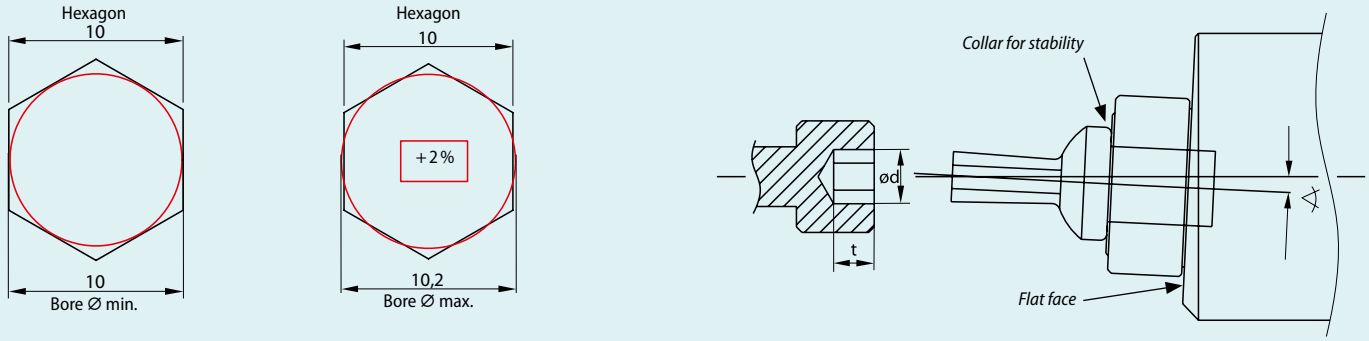
Guide values for bore Ø d:

Size	Hole dimension	
mm	Hexagon %	Square %
2 –14	0 – 2	5
15 – 20	0 – 2	5
21 – 25	0 – 2	5

Torx®	Bore Ø	Boring out allowance 0.00 –
mm	mm	mm
TX5	1	0.05
TX6	1.4	0.05
TX7	1.55	0.07
TX8	1.9	0.1
TX10	2.2	0.1

Torx®	Bore Ø	Boring out allowance 0.00 –
mm	mm	mm
TX15	2.6	0.1
TX20	2.9	0.1
TX25	3.5	0.1
TX27	3.75	0.1
TX30	4	0.1

Torx®	Bore Ø	Boring out allowance 0.00 –
mm	mm	mm
TX40	5	0.15
TX45	5.8	0.20
TX50	6.7	0.20
TX55	8.2	0.20
TX60	9.9	0.20



Guide values for the hole depth t of a blind hole: t = desired profile depth × factor approx. 1.5.

2. Profile broaching (tumbling)

When machining on a CNC lathe, start at a low speed (n approx. 100 rpm – 200 rpm) and high feed rate (f ≈ 0.1 – 0.3 mm//rev).
After a machining depth of approx. 0.5 mm, increase the feed rate and speed as shown in the table on page 777.
For maximum stability, always use the largest possible toolholder.

3. Finish machining

Retract at a higher feed rate.
Swarf remaining in the blind hole can if necessary be removed by reinserting the tool into the hole or the recess.

Notes

Cooling lubrication is necessary – because of the small depth of the profile, external cooling is sufficient.
Spare parts (for stock) are available on request at short lead times.

Please see our GARANT tools for profile slotting on pages 770 – 773.

Garant Profile broaching (tumbling) – application guide values

Profile	Size		Alu plastics	Alu	Alu cast > 10 % Si	< 500 N	< 750 N	< 900 N	< 1100 N	< 1400 N	INOX < 900 N	INOX > 900 N	GG(G)	CuZn
			N	N	N	P	P	P	P	P	M	M	K	N
			●	●	○	●	●	●	○		○	○	○	●
		V_c m/min	60	50	40	40	30	25	20		25	20	30	40
Hexagon	2 – 13 mm	f mm/rev	0.14	0.1	0.1	0.1	0.1	0.08	0.06	–	0.08	0.04	0.11	0.12
	14 – 25 mm		0.1	0.08	0.08	0.08	0.08	0.06	–	–	–	–	0.06	0.09
Square	2 – 11 mm		0.1	0.08	0.08	0.06	0.06	0.05	0.03	–	0.04	0.03	0.07	0.1
	12 –20 mm		0.08	0.06	0.06	0.04	0.04	0.03	–	–	–	–	–	0.08
Torx®	TX5 – TX20		0.14	0.1	0.1	0.1	0.1	0.08	0.05	–	0.08	0.04	0.11	0.12
	TX25 – TX60		0.1	0.08	0.08	0.08	0.08	0.06	–	–	–	–	0.08	0.1

Garant Toolholder for slotting tool

Accessories: Bearing key (No. 293000) and pin wrench (No. 293005) available ex stock.

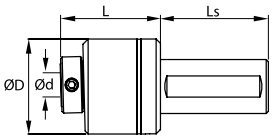
Note:
- Caution: Always use appropriate slotting tool Ø.
- Other shank connections on request.

Cylinder and morse taper shank

Accessories: Drive-out tang for MT shanks can be ordered under No. 293008 in the sizes MK2, MK3 and MK4.

29 3029/3079 – Suitable for automatic lathes.

Suitable for: CNC and conventional machines.



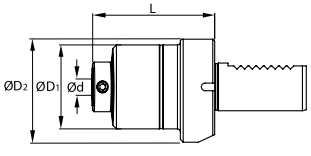
29 3023

Shank Ø	21U 29 3029	21U 29 3020	21U 29 3023	21U 29 3026	L				L_s			Ø D			
	Toolholder for metric profile slotting tools				29 3029	29 3020	29 3023	29 3026	29 3029	29 3020	29 3023 29 3026	29 3029	29 3020	29 3023	29 3026
mm	Ø d = 5 mm	Ø d = 8 mm	Ø d = 12 mm	Ø d = 16 mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
8	XXX	–	–	–	34	–	–	–	35	–	–	22	–	–	–
12	XXX	XXX	–	–	34	38	–	–	35	35	–	22	33	–	–
16	XXX	XXX	XXX	–	34	38	46	–	35	35	50	22	33	44	–
20	XXX	XXX	XXX	XXX	34	38	46	76	46	35	50	22	33	44	58
22	XXX	XXX	XXX	XXX	34	38	46	76	46	35	50	22	33	44	58
25	–	XXX	XXX	XXX	–	38	46	76	–	35	50	–	33	44	58
32	–	–	XXX	XXX	–	–	46	76	–	–	50	–	–	44	58
40	–	–	–	XXX	–	–	–	76	–	–	50	–	–	–	58
MK2	–	XXX	XXX	–	–	38	46	–	–	69	69	–	33	44	–
MK3	–	–	–	XXX	–	–	–	76	–	–	86	–	–	–	58
MK4	–	–	–	XXX	–	–	–	76	–	–	109	–	–	–	58

Shank Ø	21U 29 3079	21U 29 3070	21U 29 3073	21U 29 3076	L				L_s		Ø D			
	Toolholder for imperial profile slotting tools				29 3079	29 3070	29 3073	29 3076	29 3079	29 3070 29 3073 29 3076	29 3079	29 3070	29 3073	29 3076
inches	Ø d = 5 mm	Ø d = 8 mm	Ø d = 12 mm	Ø d = 16 mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
5/8	XXX	XXX	–	–	34	38	–	–	35	35	22	33	–	–
3/4	XXX	XXX	XXX	XXX	34	38	46	76	46	50	22	33	44	58
1	–	XXX	XXX	XXX	–	38	46	76	–	50	–	33	44	58
1.1/4	–	–	XXX	XXX	–	–	46	76	–	50	–	–	44	58

VDI arbor

Suitable for: CNC machines.



29 3030

Shank Ø	21U 29 3030	21U 29 3033	L	Ø D_1	Ø D_2
	Toolholder for slotting tool				
mm	Ø d = 12 mm	Ø d = 16 mm	mm	mm	mm
VDI20	XXX	–	57	44	50
VDI25	XXX	–	64	44	58
VDI30	XXX	XXX	83	58	68
VDI40	XXX	XXX	83	58	83

Garant Slotting tool

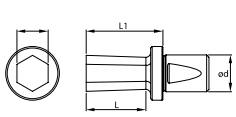
With TiN coating.

Suitable for: Profile slotting toolholders No. 293020 – 293079.

Application: For generation of profiles **in a single pass.**

Note:
- Special sizes and special profiles available in request.
- Detailed application values can be found in the info block on page 777.

Hex slotting tool



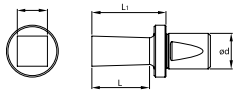
29 3040

Hexagon	21U 29 3049	21U 29 3040	21U 29 3043	21U 29 3046	L			
	Hex slotting tool, metric				29 3049	29 3040	29 3043	29 3046
mm	Ø d = 5 mm	Ø d = 8 mm	Ø d = 12 mm	Ø d = 16 mm	mm	mm	mm	mm
1,5	XXX	XXX	XXX	–	3	3	3	–
2	XXX	XXX	XXX	–	3.5	3.5	3.5	–
2,5	XXX	XXX	XXX	–	4	4	4	–
3	XXX	XXX	XXX	XXX	5	5	5	5
3,5	XXX	XXX	XXX	XXX	6	6	6	6
4	XXX	XXX	XXX	XXX	6	6.5	6.5	6.5
4,5	XXX	XXX	XXX	XXX	7	7.5	7.5	7.5
5	XXX	XXX	XXX	XXX	7	8.5	8.5	8.5
6	XXX	XXX	XXX	XXX	7	10.5	10.5	10.5
7	–	XXX	XXX	XXX	–	12	13	13
8	–	XXX	XXX	XXX	–	12.5	15.5	15.5
9	–	XXX	XXX	XXX	–	12.5	20	20
10	–	XXX	XXX	XXX	–	12.5	20	20
11	–	–	XXX	XXX	–	–	20	20
12	–	–	XXX	XXX	–	–	20	20
13	–	–	XXX	XXX	–	–	20	28
14	–	–	XXX	XXX	–	–	20	32
15	–	–	–	XXX	–	–	–	32
16	–	–	–	XXX	–	–	–	32
17	–	–	–	XXX	–	–	–	32
18	–	–	–	XXX	–	–	–	32
19	–	–	–	XXX	–	–	–	32
20	–	–	–	XXX	–	–	–	32
21	–	–	–	XXX	–	–	–	32
22	–	–	–	XXX	–	–	–	32
23	–	–	–	XXX	–	–	–	32
24	–	–	–	XXX	–	–	–	32
25	–	–	–	XXX	–	–	–	32
L_1 mm	10	18	25	40				

Hexagon	21U 29 3089	21U 29 3080	21U 29 3083	21U 29 3086	L			
	Hex slotting tool, imperial				29 3089	29 3080	29 3083	29 3086
inches	Ø d = 5 mm	Ø d = 8 mm	Ø d = 12 mm	Ø d = 16 mm	mm	mm	mm	mm
7/64	XXX	XXX	XXX	XXX	4	4	4	4
1/8	XXX	XXX	XXX	XXX	5	5	5	5
3/16	XXX	XXX	XXX	XXX	7	8	8	8
7/32	XXX	XXX	XXX	XXX	7	9.5	9.5	9.5
1/4	–	XXX	XXX	XXX	–	11	11	11
5/16	–	XXX	XXX	XXX	–	12.5	15.5	15.5
3/8	–	XXX	XXX	XXX	–	18	21	20
1/2	–	–	XXX	XXX	–	–	21	27
L_1 mm	10	18	25	40				

Square slotting tool

Note: The use of square profiles > 9 mm is recommended only in easily machined materials (higher rate of material removal).

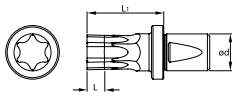


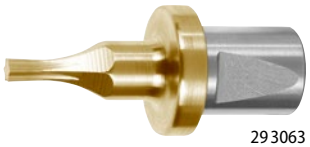
29 3053

Square	21U 29 3059	21U 29 3050	21U 29 3053	21U 29 3056	L		
	Square slotting tool, metric				29 3059	29 3050	29 3053 29 3056
mm	Ø d = 5 mm	Ø d = 8 mm	Ø d = 12 mm	Ø d = 16 mm	mm	mm	mm
1,5	XXX	XXX	XXX	–	3	3	3
2	XXX	XXX	XXX	–	3.5	3.5	3.5
2,5	XXX	XXX	XXX	–	4	4	4
3	XXX	XXX	XXX	XXX	5	5	5
3,5	XXX	XXX	XXX	XXX	6	6	6
4	XXX	XXX	XXX	XXX	6.5	6.5	6.5
4,5	XXX	XXX	XXX	XXX	7.5	7.5	7.5
5	XXX	XXX	XXX	XXX	6	8.5	8.5
6	XXX	XXX	XXX	XXX	6	10.5	10.5
7	–	XXX	XXX	XXX	–	12	13
8	–	–	XXX	XXX	–	–	15.5
9	–	–	XXX	XXX	–	–	20
10	–	–	XXX	XXX	–	–	20
11	–	–	–	XXX	–	–	20
12	–	–	–	XXX	–	–	20
13	–	–	–	XXX	–	–	28
14	–	–	–	XXX	–	–	32
15	–	–	–	XXX	–	–	32
16	–	–	–	XXX	–	–	32
17	–	–	–	XXX	–	–	32
18	–	–	–	XXX	–	–	32
19	–	–	–	XXX	–	–	32
20	–	–	–	XXX	–	–	32
L_1 mm	10	18	25	40			

Square	21U 29 3099	21U 29 3090	21U 29 3093	21U 29 3096	L		
	Square slotting tool, imperial				29 3099	29 3090 29 3093	29 3096
inches	Ø d = 5 mm	Ø d = 8 mm	Ø d = 12 mm	Ø d = 16 mm	mm	mm	mm
3/16	XXX	–	–	–	7	–	–
7/32	XXX	XXX	XXX	XXX	7	10.5	10.5
1/4	–	XXX	XXX	XXX	–	12	12
3/8	–	–	XXX	XXX	–	21	20
1/2	–	–	XXX	XXX	–	21	27
L_1 mm	10	18	25	40			

Slotting tool for Torx®





29 3063

Torx® profile	21U 29 3069	21U 29 3060	21U 29 3063	21U 29 3066	L
	Slotting tool for Torx®				
mm	Ø d = 5 mm	Ø d = 8 mm	Ø d = 12 mm	Ø d = 16 mm	mm
TX5	XXX	XXX	XXX	–	1.5
TX6	XXX	XXX	XXX	–	1.7
TX7	XXX	XXX	XXX	–	1.7
TX8	XXX	XXX	XXX	–	2
TX10	XXX	XXX	XXX	XXX	2
TX15	XXX	XXX	XXX	XXX	3
TX20	XXX	XXX	XXX	XXX	3.5
TX25	–	XXX	XXX	XXX	4
TX27	–	XXX	XXX	XXX	4
TX30	–	XXX	XXX	XXX	4.5
TX40	–	–	XXX	XXX	5
TX45	–	–	XXX	XXX	5.5
TX50	–	–	XXX	XXX	6
TX55	–	–	XXX	XXX	7
TX60	–	–	–	XXX	7.5
L_1 mm	10	18	25	40	

KOMET® Parting off tool (type A, AE)

KOMET® parting-off tooholder

For blades No. 240014 – 240020. The blade is clamped to the side of the slotted toolholder.

Attention: Supplied **without blade.**

Type		A00	A0	AE	A1/2A
24G 24 0010	KOMET® parting-off tooholder	XXX	XXX	XXX	XXX
Shank height	mm	16	18	18	22
Shank width	mm	11	11	11	14.5
Overall length	mm	100	125	125	170
for blade height	mm	8	10	11	16
for blade width	mm	2.2	2.7	0,9 – 2,15	4
Cutting edge height	mm	12	14	14	20
suitable blade, parting-off: 240014		A00	A0	–	A1/2A
suitable cutter, circlip grooves: 240020		–	–	A0.9 up to A2.15	A0.9 up to A2.15 with 240022, A2.65 up to A5.15

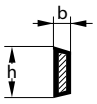
_A1/2A

KOMET® parting-off blade

HSS Co5

Type		A00	A0	A1/2A
24H 24 0014	KOMET® parting off blade HSS-Co5	XXX	XXX	XXX
Height h	mm	8	10	16
Width b	mm	2.2	2.7	4
Overall length	mm	75	100	150

24 0014

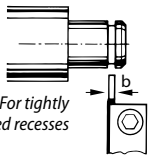


KOMET® circlip grooving blade

HSS Co5

24 0020

Application: For production of external grooves for circlips (SEEGER® rings). The width of the blade corresponds to the applicable tolerance H11 for circlip grooves. The blade needs to be reground on only the front face.



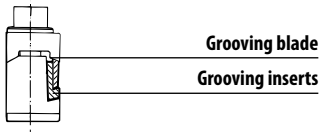
For tightly toleranced recesses

Width b	mm	A0,9	A1,1	A1,3	A1,6	A1,85	A2,15	A2,65	A3,15	A4,15	A5,15
24H 24 0020	KOMET® Circlip grooving blade HSS-Co5	XXX	XXX	XXX	XXX	XXX	XXX	(XXX)	(XXX)	(XXX)	(XXX)
for circlip width	mm	0.8	1	1.2	1.5	1.75	2	2.5	3	4	5
Overall length	mm	80	80	80	80	80	80	150	150	150	150
Height h	mm	11	11	11	11	11	11	16	16	16	16
suitable toolholder		AE and A1/2A with No. 240022	AE and A1/2A with No. 240022	AE and A1/2A with No. 240022	AE and A1/2A with No. 240022	AE and A1/2A with No. 240022	AE and A1/2A with No. 240022	A1/2A	A1/2A	A1/2A	A1/2A

KOMET® adaptor

For circlip grooving blade No. 240020. Size A0.9 – A2.15 in combination with tooholders No. 240010 A1/A2.

24G 24 0022	KOMET® insert for Circlip grooving blade	XXX



KOMET® Boring bar holder / toolholder

24 0072 – **Toolholder with 2 clamping possibilities.**

Size B8; B10 – With offset slots on both sides.

Application:

24 0070 – For clamping boring bars No. 240074 - 240088, or for HSS round tool bits No. 295020.

24 0072 – For clamping round and square tool shanks.

Boring head

24 0070_B8_B10

24 0072

Type	24G 24 0070 KOMET® boring bar holder	24G 24 0072 KOMET® toolholder KD	Length mm	Width mm	Height mm	Mounting hole mm	Cutting edge height mm	Shaft length mm	Shank width mm	Shank height mm	☐ socket mm	Round cutting edge height mm
B8	XXX	–	100	12	12	both sides 8	6	–	–	–	–	–
B10	XXX	–	125	15	15	8 and 10	7.5	–	–	–	–	–
KD8	–	XXX	–	–	–	–	–	120	12	21	8×8	8
KD10	–	XXX	–	–	–	–	–	120	12	21	10×10	10

HSS Co10

KOMET® Boring bars for bores from 2.5 mm ∅

Microscopically tested, precise cutting profile.
Cost-efficient due to multiple regrinding of the cutting face.
Sizes with suffix **L = extended shank.**

Tool material: **HSS/Co10** – for difficult to machine materials.

Note: **For suitable boring bar holders see No. 240070 and No. 240072.**

24 0074

Type	24H 24 0074	24H 24 0078	24H 24 0084	24H 24 0088	Boring depth		for pitches up to	for pitches	for bores from ∅	Overall length	Shank ∅
	KOMET® roughing bar	KOMET® recessing bar	KOMET® internal thread boring bar, right-hand		24 0074 24 0078 24 0088	24 0084	24 0084	24 0088			
	Form g	Form f	Form 60° (metric)	Form 55° (Whitworth)	mm	mm	mm	threads/inch	mm	mm	mm
B00	XXX	XXX	–	–	10	–	–	–	2.5	50	8
B01	XXX	XXX	XXX	–	20	16	1	–	3	60	8
B02	XXX	XXX	XXX	–	24	19	1	–	5	60	8
B02L	–	XXX	–	–	24	–	–	–	5	125	8
B03	XXX	XXX	XXX	XXX	26	26	1.5	16–50	7	65	8
B03L	–	XXX	–	–	26	–	–	–	7	125	8
B04	XXX	XXX	XXX	XXX	45	45	1.5	16–50	9	75	8
B04L	XXX	XXX	–	–	80	–	–	–	9	125	8
B05	XXX	XXX	XXX	XXX	50	50	2	12–40	12	80	8
B05L	(XXX)	XXX	XXX	–	80	80	2	–	12	125	8
B06	XXX	XXX	XXX	XXX	60	60	3	8–30	14	95	10
B06L	XXX	XXX	–	–	90	–	–	–	14	125	10

Radius turning tool

Application: For turning convex radii on external or internal diameters.

Holder

With ground contact face and location pins for mounting radius indexable inserts.

Shank cross section		mm	10	12	16	20	25
29W 24 0026	Toolholders for radius indexable inserts		XXX	XXX	XXX	XXX	XXX
for radius indexable inserts			R1 – R6	R1 – R6	R1 – R6	R1 – R6	R 8 – 12
Shank height		mm	10	12	16	20	25
Shank width		mm	10	12	16	20	25
Overall length		mm	103	103	103	117	125

24 0026

Radius indexable inserts

HSS Co5

Rake angle 12° suitable for general purpose use.

24 0030_R5

Radius		mm	R1	R1,5	R2	R2,5	R3	R4	R5	R6	R8	R10	R12
29W 24 0030	Radius indexable insert 12° HSS-Co5, H7		XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX

HOLEX Radius turning inserts SNMX

Suitable for: eco lever lock toolholder PSSN. For example eco lever lock toolholders No. 251102; 251103; 251112; 251113.

Note: The insert pocket must be modified when using indexable inserts with a radius ≥ 3 mm.

New version!
Now with 8 cutting edges.

25 1398_1-4

Radius			mm	1	2	3	4	1-4
29W 25 1398	SNMX 120408	HUT25		XXX	XXX	XXX	XXX	XXX
●				P	P	P	P	P
○				M	M	M	M	M
⚙				●	●	●	●	●
a_p			mm	1 – 4				
f			mm/rev.	0.1 – 0.2				
v_c main application			m/min	50 – 120				
v_c secondary application			m/min	30 – 80				

HOLEX Tool bits

Tool bits with straight-cut square ends.

29 5000 – **Square tool bits to DIN 4964 form B. Width:** Tolerance **h12.** Ends chamfered.
29 5020 – **DIN 4964 form A;** precision ground within tolerance **h14.**
29 5030 – **Solid carbide**. Precision round tool bits. Ground within tolerance **h6.**
29 5060 – **Square tool bits to DIN 4964 form D.**
29 5080 – **Trapezoidal tool bits to DIN 4964 form E.**
29 5000/5020 – **HSS Co 10** (10 % cobalt, 67 HRC).
29 5060/5080 – Height and width: Tolerance **h14. HSS Co 10** (10 % cobalt).

Application: For turning, boring out, grooving etc.; particularly for production of blanks for profile cutters.

HSS Co 10 29 5000

HSS Co 10 29 5020

Solid carbide 29 5030

HSS-Co 10 29 5060

HSS-Co 10 29 5080

D×Length	22E 29 5000	22E 29 5020	22E 29 5030
	Square tool bit	Round tool bit	
mm	HSS Co 10	HSS Co 10	Solid carbide
2×40	–	XXX	–
3×63	–	XXX	–
3×100	–	–	XXX
4×63	–	XXX	–
4×80	XXX	XXX	–
4×100	–	–	XXX
5×63	–	XXX	–
5×80	XXX	XXX	–
5×100	–	–	XXX
6×63	–	XXX	–
6×80	XXX	XXX	–
6×100	XXX	XXX	XXX
8×63	XXX	XXX	–
8×80	–	XXX	–
8×100	XXX	XXX	XXX
8×125	XXX	XXX	–
8×160	XXX	–	–
10×63	XXX	XXX	–
10×80	XXX	XXX	–
10×100	XXX	XXX	XXX
10×125	XXX	–	–
10×160	XXX	XXX	–
10×200	XXX	–	–
12×63	XXX	–	–
12×80	XXX	XXX	–
12×100	XXX	XXX	XXX
12×125	XXX	XXX	–
12×160	XXX	XXX	–
12×200	XXX	–	–
14×100	XXX	–	XXX
14×125	XXX	–	–
14×160	XXX	XXX	–
14×200	XXX	–	–
16×100	XXX	–	XXX
16×125	XXX	XXX	–
16×160	XXX	XXX	–
16×200	XXX	–	–
20×100	–	–	XXX
20×160	XXX	XXX	–
20×200	XXX	XXX	–
25×160	XXX	–	–
25×200	XXX	–	–

Height × width	22E 29 5060	22E 29 5080	Length	
	Square tool bit	Trapezoidal tool bit		
mm	HSS Co 10	HSS Co 10	29 5060 mm	29 5080 mm
8×4	XXX	–	100	–
10×2,5	–	XXX	–	80
10×2,5L	–	XXX	–	125
10×5	XXX	–	160	–
10×6	XXX	–	160	–
12×3	–	XXX	–	160
12×6	XXX	–	160	–
12×8	XXX	–	160	–
16×4	XXX	XXX	80	100
16×4L	XXX	XXX	100	160
16×4XL	XXX	–	160	–
16×10	XXX	–	100	–
16×10L	XXX	–	160	–
16×10XL	XXX	–	200	–
20×5	–	XXX	–	160
20×5L	–	XXX	–	200
20×12	XXX	–	160	–
25×6	XXX	XXX	200	160
25×12	XXX	–	200	–

HOLEX D-bits

29 5040 – **HSS Co 10** (10 % cobalt). **D-bits with straight cutting edge,** precision ground within tolerance **h8.** (Half section pre-ground, 0.2 mm grinding allowance).

29 5050 – **Solid carbide. D-bits with straight cutting edge.** Precision ground with maximum run-out error 0.005 mm. (Half section pre-ground). **Shank tolerance up to diameter 8 mm: h7.**

Application: For engraving and copying in tool, mould, and die making.

D×Length	22E 29 5040	22E 29 5050	Cutter length	
	D-bits			
mm	HSS Co 10	Solid carbide	29 5040 mm	29 5050 mm
2×40	XXX	XXX	3.5	3
2,5×40	–	XXX	–	3
3×50	–	XXX	–	3
3×63	XXX	–	4.5	–
4×63	XXX	XXX	6	4
4×80	XXX	–	6	–
5×63	–	XXX	–	5
5×80	XXX	–	7.5	–
6×80	XXX	XXX	9	6
6×100	XXX	–	9	–
8×90	XXX	XXX	12	8
10×125	XXX	–	15	–
12×140	XXX	–	18	–
16×160	XXX	–	24	–

HSS Co10

HSS Co 10 29 5040

Solid carbide

Solid carbide 29 5050

HOLEX HSS/E turning tool

All dimensions **welded.**

Application: Universally applicable, medium cutting speeds.

Shank square	mm	12	16	20	25
22E 29 6100 Turning tool **right-hand similar to DIN 4952** HSS E		XXX	XXX	XXX	XXX
Overall length	mm	110	140	160	200

29 6100

Shank ∅	mm	8	10	12	16
22E 29 6300 Internal turning tool **right-hand similar to DIN 4953** HSS E		XXX	XXX	XXX	XXX
Overall length	mm	140	160	180	220
for bores from ∅	mm	18	20	22	30

29 6300

Shank ∅	mm	6R	8R	10R	12R	16R
22E 29 6400 Internal corner turning tool **right-hand similar to DIN 4954** HSS E		XXX	XXX	XXX	XXX	XXX
Overall length	mm	125	140	160	180	220
for bores from ∅	mm	16	18	20	22	30

29 6400

Shank square	mm	12	16	20
22E 29 6500 Pointed turning tool, straight **neutral similar to DIN 4955** HSS E		XXX	XXX	XXX
22E 29 6750 Corner turning tool cranked **right-hand similar to DIN 4965** HSS E		XXX	XXX	XXX
Overall length	mm	110	140	160

29 6500

29 6750

Shank square	mm	12	16	20	25
22E 29 6800 Side turning tool **right-hand similar to DIN 4960** HSS E		XXX	XXX	XXX	XXX
Overall length	mm	110	140	160	200

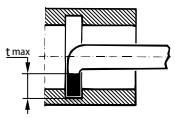
29 6800

Shank height	mm	12	16	20	25
22E 29 7000 Parting off tool **right-hand similar to DIN 4961** HSS E		XXX	XXX	XXX	XXX
Overall length	mm	110	125	140	180
Shank width	mm	8	10	12	16
Blade width	mm	3	3	4	5

29 7000

Shank ∅	mm	6	8	10	12	16	20	25
22E 29 7120 Hook turning tool **right-hand similar to DIN 4963** HSS E		XXX	XXX	XXX	XXX	XXX	XXX	XXX
Overall length	mm	125	140	160	180	210	250	300
Blade width	mm	2	2	3	3	4	5	6
for bores from ∅	mm	13	16	20	25	32	40	50
maximum grooving depth t_{max}	mm	3	4	6	8	10	14	18

29 7120



HOLEX Carbide tipped turning tool

Turning tool

Fitted with diamond ground carbide inserts.

Application: P20/K25 for machining steel and cast iron.
M20 for machining stainless steels.

Attention: For rough and interrupted machining the cutting edges should be sharpened with a boron carbide hand lapper (No. 558812).

Shank square		mm	10	12	16	20	25
22E 29 6025	Turning tool right-hand, similar to DIN 4971 (ISO 1)	P20/K25	XXX	XXX	XXX	XXX	XXX
22E 29 6030		M20	XXX	XXX	XXX	XXX	XXX
Overall length		mm	90	100	110	125	140

29 6025

29 6030

Shank square		mm	10	12	16	20	25	32
22E 29 6125	Turning tool right-hand, similar to DIN 4972 (ISO 2)	P20/K25	XXX	XXX	XXX	XXX	XXX	XXX
22E 29 6130		M20	XXX	XXX	XXX	XXX	XXX	XXX
22E 29 6225	Turning tool left-hand, similar to DIN 4972 (ISO 2)	P20/K25	XXX	XXX	XXX	XXX	XXX	–
Overall length		mm	100	100	110	125	140	170

29 6125

29 6130

Shank square		mm	10	12	16	20	25
22E 29 6325	Internal turning tool right-hand, similar to DIN 4973 (ISO 8)	P20/K25	XXX	XXX	XXX	XXX	XXX
22E 29 6330		M20	XXX	XXX	XXX	XXX	XXX
Overall length		mm	150	180	210	250	300
for bores from ∅		mm	18	21	27	34	43

29 6325

29 6330

Shank square		mm	10	12	16	20	25
22E 29 6425	Internal corner turning tool right-hand, similar to DIN 4974 (ISO 9)	P20/K25	XXX	XXX	XXX	XXX	XXX
22E 29 6430		M20	XXX	XXX	XXX	XXX	XXX
22E 29 6455	Internal corner turning tool left-hand, similar to DIN 4974 (ISO 9)	P20/K25	XXX	XXX	XXX	XXX	XXX
Overall length		mm	150	180	210	250	300
for bores from ∅		mm	18	21	27	34	43

29 6425

29 6430

Shank height		mm	16	20	25
22E 29 6525	Turning tool neutral, similar to DIN 4975 (ISO 10)	P20/K25	XXX	XXX	XXX
Overall length		mm	110	125	140
Shank width		mm	10	12	16

29 6525

Shank height		mm	10	12	16	20	25
22E 29 6605	Turning tool, wide neutral, similar to DIN 4976 (ISO 4)	P20/K25	XXX	XXX	XXX	XXX	XXX
Overall length		mm	90	100	110	125	140
Shank width		mm	10	12	16	12	16
Blade width		mm	10	12	16	12	16

29 6605

Shank square		mm	10	12	16	20	25
22E 29 6705	Face turning tool right-hand, similar to DIN 4977 (ISO 5)	P20/K25	XXX	XXX	XXX	XXX	XXX
22E 29 6715		M20	XXX	XXX	XXX	XXX	XXX
Overall length		mm	90	100	110	125	140

29 6705

29 6715

Shank square		mm	10	12	16	20	25
22E 29 6745	Corner turning tool **right-hand, similar to DIN 4978 (ISO 3)**	P20/K25	XXX	XXX	XXX	XXX	XXX
22E 29 6755		M20	XXX	XXX	XXX	XXX	XXX
Overall length		mm	90	100	110	125	150

29 6745

29 6755

Shank square		mm	10	12	16	20	25
22E 29 6825	Turning tool **right-hand, similar to DIN 4980 (ISO 6)**	P20/K25	XXX	XXX	XXX	XXX	XXX
22E 29 6830		M20	XXX	XXX	XXX	XXX	XXX
22E 29 6925	Turning tool **left-hand, similar to DIN 4980 (ISO 6)**	P20/K25	XXX	XXX	XXX	XXX	XXX
Overall length		mm	90	100	110	125	140

29 6825

29 6830

Shank height		mm	12	16	20	25	32
22E 29 7025	Grooving tool **right-hand, similar to DIN 4981 (ISO 7)**	P20/K25	XXX	XXX	XXX	XXX	XXX
22E 29 7030		M20	XXX	XXX	XXX	XXX	XXX
22E 29 7105	Grooving tool **left-hand, similar to DIN 4981 (ISO 7)**	P20/K25	XXX	XXX	XXX	XXX	XXX
Overall length		mm	100	110	125	140	170
Shank width		mm	8	10	12	16	20
Blade width		mm	3	4	5	6	8

29 7025

29 7030

Shank square		mm	10	12	16	20	25
22E 29 7135	Hook turning tool **right-hand, similar to DIN 263 (ISO 11)**	P20/K25	XXX	XXX	XXX	XXX	XXX
22E 29 7145		M20	XXX	XXX	XXX	XXX	XXX
Overall length		mm	150	160	180	210	250
Blade width		mm	3	4	5	6	8
for bores from ∅		mm	25	30	40	50	60
maximum grooving depth t_{max}		mm	6	10	12	16	20

29 7135

29 7145

Shank square		mm	10	12	16	20	25
22E 29 7155	Thread turning tool **right-hand, similar to DIN 282 (ISO 12)**	P20/K25	XXX	XXX	XXX	XXX	XXX
22E 29 7165		M20	XXX	XXX	XXX	XXX	XXX
Overall length		mm	90	110	125	140	140

29 7155

29 7165

Shank square		mm	10	12	16	20	25
22E 29 7175	Internal thread turning tool **right-hand, similar to DIN 283 (ISO 13)**	P20/K25	XXX	XXX	XXX	XXX	XXX
22E 29 7185		M20	XXX	XXX	XXX	XXX	XXX
Overall length		mm	150	160	180	210	250
for bores from ∅		mm	20	30	36	45	55

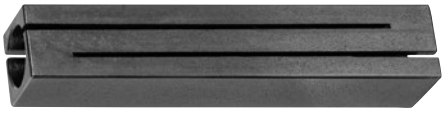
29 7175

29 7185

Turning toolholder with bore

Slotted in opposite direction; the round boring bar shank is clamped firmly and securely with only little pressure. All external surfaces are machined square.

Application: For holding turning tools with round shank No.296300, 296400, 297120 (except size 25) and for round tool bits No. 295020.



29 7200

Bore ∅		mm	6	8	10	12	16	20
22E 29 7200	Turning toolholder with bore		XXX	XXX	XXX	XXX	XXX	XXX
Height		mm	10	12	14	16	20	25
Overall length		mm	70	80	85	90	100	110

New products – Clamping technology

new

We use this symbol to tag new items in our catalogue range

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HOLEX sidelock arbors (Weldon)

From page **794**
GARANT weldon arbor with carbide bush

From page **825**
GARANT HiRunER Mini

Page **826**
Albrecht collet chuck, slim

From page **800**
GARANT power chuck with security function

From page **828**
HOLEX combination milling mandrel and face mill arbors

From page **833**
HOLEX Hydro Power

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BT double contact

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Workpiece back-stops GARANT & HOLEX

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EWS grooving toolholder for radial turret

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GARANT hydraulic arbors: VDI arbors, plain shank and ER arbors

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GARANT bar stop damper

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GARANT die stock for cutting external threads

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GARANT compensating holder

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GARANT bar holder

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Extension of the GARANT driven tools range

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GARANT – eco parting-off toolholder

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HOLEX lathe centres

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GARANT VGBasic

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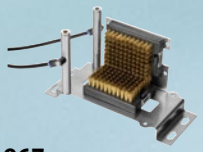
GARANT magnetic gripper



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GARANT TC1 cleaning station

Page **968**
GARANT cleaning propeller

Page **968**
Schunk cleaning ball

Page **990**
GARANT pneumatic centring vice

From page **992**
GARANT Xtric extension of range of sizes

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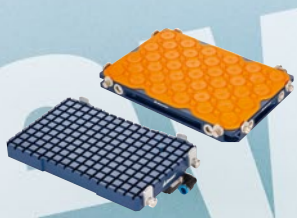
HOLEX 3-way manual vice for drilling machine

Page **1035**
GARANT magnetic support frame

Page **1036**
GARANT sets of magnetic parallels

Page **1046**
GARANT compact clamps

Page **1072**
GARANT LM1 lifting magnet



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GARANT vacuum clamping

Clamping technology

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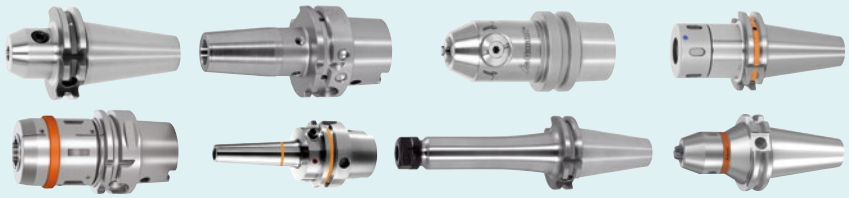
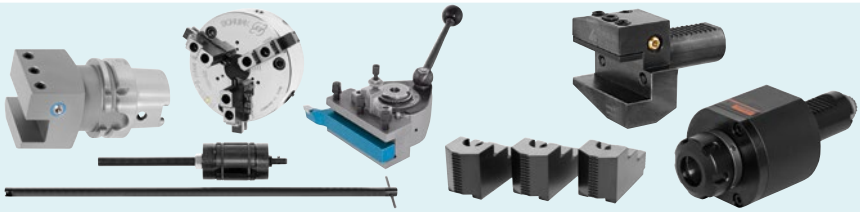


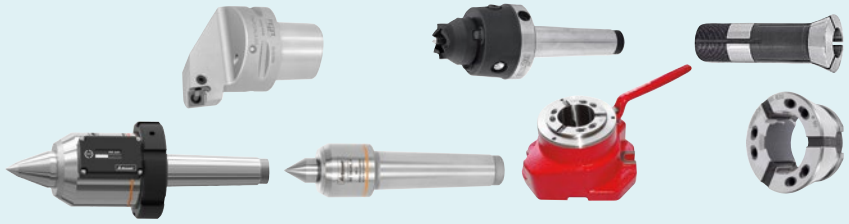
Chucks, arbors, accessories

30 793 – 875



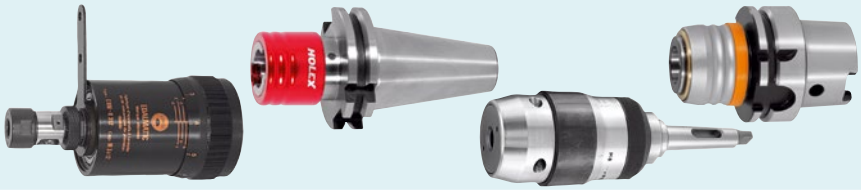
Lathe chucks, quick-change toolholders, VDI toolholders, driven tools

31 876 – 920



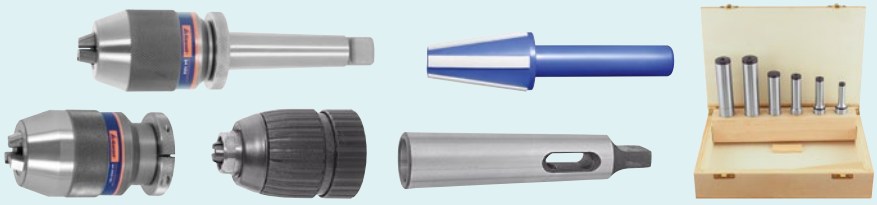
Lathe centres, face drivers, collets, clamping heads, toolholders for indexable inserts

32 921 – 942



Tapping chucks, quick-change chucks

33 943 – 950



Drill chucks, arbors, taper sleeves, taper cleaners

34 951 – 958

Edge finder, 3D edge finder, shrink-fit unit, pre-setting device, data clip, tool fitting aid, cleaning aids

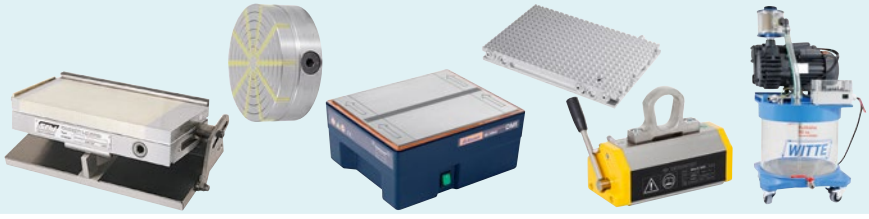
35 959 – 975

Zero-point clamping system, NC vices, centring vices, clamping rails, 5-axis vices, sets of parallels

36 976 – 1038

Machine clamps, toggle clamps

37 1039 – 1071



Load lifting magnets, permanent magnet tables, electro-permanent magnets, demagnetisers, vacuum clamping technology

38 1072 – 1080

Pictograms

Standard

DIN 69871 | ISO 7388-1 | DIN 2080 | JIS B6339 | ISO 7388-2 | DIN 69893 | ISO 12164-1 | DIN 6359

DIN 6358 | DIN 69882-2 | ISO 26623-1 | ISO 26622-1 | ISO 12164-3

Tool arbors
Shank type,
Gripper groove, and interface correspond to this DIN.

DIN 69872 | ISO 7388 | MAS 403

Pull studs correspond to this DIN.

ISO 10897 | ISO 15488-A | ISO 15488-B | DIN 2084

ER / OZ collets / clamping nuts and accessories correspond to this DIN.

Standard — **Manufacturer's standard**

Coolant feed

Note: **CS** = **C**oola**n**t **s**upply / **ICS** = **I**nternal **c**oolant **s**upply / **CCB** = **C**ooling **chan**nel **b**ores.

Form A | Form E | Form F

For ISO tapers: no central coolant supply available (the arbor is **not** bored through).
For hollow shank taper: central axial coolant supply available via a coolant pipe.
Form F: no central coolant supply available, only through bored.

Form AD

For ISO taper arbors: Coolant supplied only **centrally** through the arbor (arbor through bored).

Form ADB

For ISO taper arbors: Coolant supplied centrally (= form AD) or laterally via the collar (= form B).

≤50 bar

Internal coolant supply limited to maximum 50 bar, or suitable for internal coolant supply.

Arbors with cooling channel bores and **closable threads.**

Arbors with cooling channel bores **cannot be plugged.**

Radial run-out

≤2µm | ≤3µm | ≤5µm | ≤6µm | ≤10µm | ≤20µm | ≤30µm | ≤50µm

Radial run-out of various arbors and short drill chucks.

Run-out of ER collets: HP = High precision ER collet**(2 µm)** FAHRION
ER standard collet **(5 µm)** FAHRION
ER standard collet **(10 µm)** HOLEX

≤3µm HP+CP | ≤6µm ER+CP | ≤10µm OZ+CP

System radial run-out FAHRION ER precision collet chuck **Centro P (CP)**
in connection with FAHRION ER collets **(HP or standard)** or **OZ**collet (type 444E).

Balancing speed

G 6.3 8000 min^{-1} | G 6.3 12000 min^{-1} | G 6.3 15000 min^{-1} | G 2.5 18000 min^{-1} | G 6.3 20000 min^{-1} | G 2.5 25000 min^{-1} | G 2.5 30000 min^{-1} | G 2.5 40000 min^{-1} | G 6,3 18000 min^{-1}

Balancing quality of various arbors: e.g. precision balanced to G2.5 at 25000 rpm.

Application

HSC

Arbor suitable for
High speed machining
(high speed cutting)

HPC

Arbor suitable for high performance cutting.

IP 67

Tool dust-tight and watertight.

≤14 Nm

Maximum tightening torque (M_{Dmax}).

Form A

For HSK arbors:
– Application in machining centres.
– Torque transmission by 2 drive slots at the end of the taper.

Form E

For HSK arbors:
– Used for high frequency spindles (e.g. woodworking machines)
– Rotationally symmetrical, without drive slots.
– Torque transmission by friction.

Vibration damping

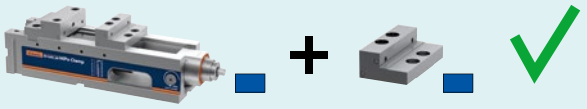
Prepared for zero point clamping system

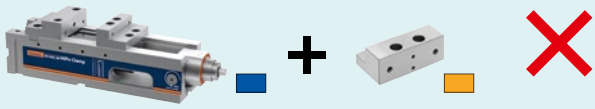
BT-DC

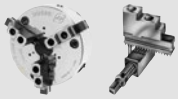
BT arbors with double contact

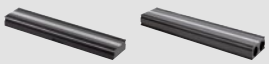
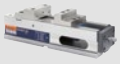
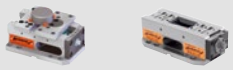
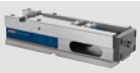
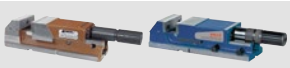
Workpiece clamping

Find the right tool quickly and easily.





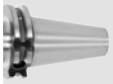
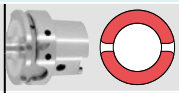
Lathe chucks – Group 31		Colour code	Ø in mm					Page
	RÖHM **Geared scroll chucks** ■ **DIN 6350** ■ **DIN 55027** ■ **DIN 55029**		160 400	80 200	100 250	125 315		**from 876**
	HOLEX **Geared scroll chucks** ■ **DIN 6350** ■ **DIN 55027** ■ **DIN 55029**			80 200	100 250	125 315	160 400	**from 879**
	SCHUNK **Self-centring lathe chucks** **DIN 6350**			160	200	250	315	**881**
	**RÖHM** **Self-centring lathe chucks** ■ **DIN 6350** ■ **DIN 55027**			160	200	250	315	**882**

Vices – Group 36		Colour code	Width in mm					Page
	GARANT Multi-point clamping rail		80	120				**983**
	GARANT centring vice, pneumatic size 160		80	120				**990**
	GARANT XTric		80		125			**992**
	GARANT Xpent			100	125			**996**
	ALLMATIC TeleCentric		70					**1005**
	ALLMATIC NC8			90	125	160	200	**1006**
	GARANT HiPo Clamp				125	160		**1007**
	GARANT LC				125			**1009**
	HOLEX NC vice				130			**1010**
	ALLMATIC DUO ALLMATIC DUO PLUS			90	 125			**1011**
	ALLMATIC T-REX ALLMATIC CENTRO GRIPP				125			**1013** **1014**
	ALLMATIC TITAN2 /				125	160		**1020**
	GARANT LCV 125G				125			**1023**
	ALLMATIC HD HOLEX HD			100	125 125	160 160		**1027** **1028**
	HOLEX high-pressure vice		113		135		160	**1029**
	GERARDI HOLEX MODULAR				125 125	150 150	200	**1031** **1032**

Colour code in Group 30, 31, 32, 35 and 36

Find the right tool quickly and easily.

A simple colour coding can be found in respective tables for a quick visual assignment and linking of tool groups across different products.

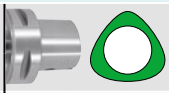
Arbors group 30, 31, 33	 ISO taper arbors									 Hollow shank taper arbors								
														(Form A, E)			(Form F)	(Form T)
	DIN 69871			DIN 2080			MAS BT JIS B 6339			DIN 69893								HSK-T ISO 12164-3
Taper size	SK 30	SK 40	SK 50	SK 30	SK 40	SK 50	BT 30	BT 40	BT 50	HSK 25	HSK 32	HSK 40	HSK 50	HSK 63	HSK 80	HSK 100	HSK 63	HSK T32	HSK T40
Colour code																			
	Page	Page	Page	Page	Page	Page	Page	Page	Page	Page	Page	Page	Page	Page	Page	Page	Page	Page	Page
Weldon arbor	793	793	793	○	820	820	822	822	822	-	○	○	○	837	○	837	837	-	-
Whistle Notch arbor	-	796	796	-	-	-	-	823	823	-	○	○	○	838	○	838	-	-	-
Combination arbor Weldon/ Whistle-Notch	-	795	-	-	-	-	-	-	-	-	-	-	-	838	-	-	-	-	-
ER collet chuck	797	797	797	○	821	○	824	824	824	841	841	839	841	839	○	839	840	-	-
OZ collet chuck	○	799	799	○	821	821	○	823	○	-	-	-	○	○	-	○	-	-	-
Combination face mill adapter	○	801	801	○	821	821	○	828	828	-	○	○	○	844	○	844	844	-	-
Face mill head arbor	802	802	802	-	○	○	828	828	828	-	-	-	○	844	○	845	845	-	-
Reducing sleeve arbor	○	804	804	○	○	○	○	829	829	-	-	-	○	841	○	841	841	-	-
Screw-in milling arbor	806	806	806	-	-	-	830	830	830	-	-	-	-	848	-	848	○	-	-
Short drill chuck	810	810	810	○	820	820	831	831	831	-	○	852	○	852	○	852	852	-	-
Micro drill chuck	○	-	-	-	-	-	○	-	-	○	○	857	-	-	-	-	-	-	-
Hydraulic chucks	811	811	812	-	-	-	833	832	833	-	○	850	850	849	○	849	849	-	-
Heavy-duty chuck	○	800	800	-	-	-	○	827	827	-	-	○	○	843	○	843	○	-	-
Shrink-fit arbor	816	816	817	-	-	-	832	832	832	-	○	853	856	853	○	853	854	-	-
Toolholders for indexable inserts	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	919
Reduction / extensions	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	920
Quick-change tapping heads	○	944	944	○	○	○	944	944	944	-	-	○	○	944	○	944	○	-	-
Axial / radial toolholder	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	○	920
VDI toolholder	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Indexable drill arbor	-	805	805	-	-	-	–	830	830	-	-	-	-	847	-	847	-	○	○
Boring bar holder	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	○	913
Parting-off toolholder	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	○	920
Driven tools	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Blanking plug	-	-	-	-	-	-	-	-	-	-	○	920	○	920	○	○	-	-	-

○ = available on request / – = not available

Tool clamping

Colour code examples:

In groups 30, 31, 32, 35 and 36 these products and tool groups have SK40 tapers.
This ensures that SK40 arbors, clamping fixtures in size 35 and UNIT storage systems in group 97 are compatible.

				 Polygonal shank ISO 26623-1						BMT toolholders				VDI arbors DIN 69880					
HSK T50	HSK T63	HSK T80	HSK T100	PSC 32	PSC 40	PSC 50	PSC 63	PSC 80	TS TS shank ISO 26622-1	40	60	55	68	Size 16	Size 20	Size 25	Size 30	Size 40	Size 50
Page	Page	Page	Page	Page	Page	Page	Page	Page	Page	Page	Page	Page	Page	Page	Page	Page	Page	Page	Page
-	-	-	-	○	858	858	858	858	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	○	○	○	858	○	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	○	859	859	859	859	-	-	-	-	-	○	856	○	856	856	○
-	-	-	-	-	-	-	-	-	-	-	-	-	-	○	○	○	856	856	○
-	-	-	-	○	○	○	○	○	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	○	859	859	859	859	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	○	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	○	○	○	○	○	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	○	860	○	860	○	-	-	-	-	-	-	856	○	856	856	○
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	○	○	○	859	○	-	-	-	-	-	-	-	-	○	○	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	○	860	860	860	860	-	-	-	-	-	-	-	-	-	-	-
-	923	-	○	-	923	923	923	○	○	-	-	-	-	-	-	-	-	-	-
-	922	-	○	-	922	922	922	○	○	-	-	-	-	-	-	-	-	-	-
-	-	-	-	○	○	○	944	○	-	-	-	-	-	○	908	○	908	908	○
○	923	○	○	○	921	921	921	921	○	918	918	918	918	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	900	900	900	900	900	900
○	○	○	○	○	○	○	○	○	○	919	919	919	919	○	914	860	860	860	860
○	920	○	○	○	922	922	922	922	○	919	919	919	919	903	903	903	903	903	903
○	920	○	○	○	-	923	923	○	○	-	-	-	-	901	901	901	901	901	901
-	-	-	-	-	-	-	-	-	-	-	-	-	-	915	915	915	915	915	915
-	-	-	-	○	922	○	922	○	○	-	-	-	-	909	909	909	909	909	909

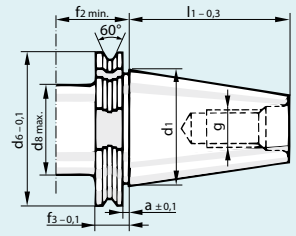
○ = available on request / – = not available

Shank versions for milling machines and machining centres

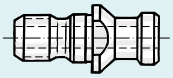
The extremely high tool quality protects the machine spindle and extends the service life of the tools.
Tolerance is tighter than required by DIN: Taper accuracy to AT 3 (max. 3 µm), surface roughness RZ < 0.001 mm.

Note: See page 760 for information on hollow shank interfaces (HSK).

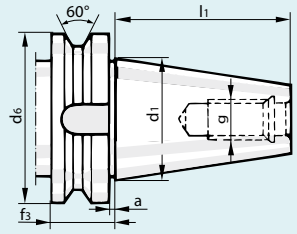
Shanks for NC machines and machining centres

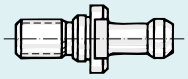


Form A: without through hole
Form AD: with through hole **for central coolant feed**
Form B: for lateral coolant feed via the tool collar



Pull studs to
DIN 69 872 or ISO 7388/II type B
or with snap ring groove.





Pull studs to JIS standard.

DIN 69871 part 1

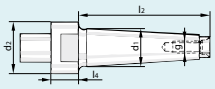
	SK 30	SK 40	SK 50
l 1	47.80	68.40	101.75
d 1	31.75	44.45	69.85
d 6	50.00	63.55	97.50
d 8	45.00	50.00	80.00
f 2	35.00	35.00	35.00
f 3	19.10	19.10	19.10
a	3.20	3.20	3.20
g	M 12	M 16	M 24

JIS B 6339 (Japanese Standard)
(previously MAS-BT)

	SK 30	SK 40	SK 50
l 1	48.40	65.40	101.80
d 1	31.75	44.45	69.85
d 6	46.00	63.00	100.00
f 3	22.00	27.00	38.00
a	2.00	2.00	3.00
g	M 12	M 16	M 24

Shanks for conventional milling machines and NC machines

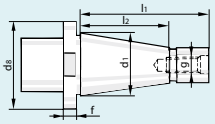
MK 3, MK 4 and MK 5 with Morse taper and internal draw thread.



DIN 2207

	MT 3	MT 4	MT 5
l 2	86	109	136
l 4	18	23	28
d 1	23.825	31.267	44.399
d 2	36	43	60
g	M 12	M 16	M 20

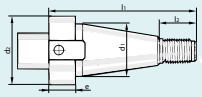
SK 30 and SK 50
with internal draw thread
SK 30 – in stock at the manufacturer.



DIN 2080

	SK 30	SK 50
l 1	68.40	126.80
l 2	50.00	105.00
d 1	31.75	69.85
d 8	50.00	97.50
f	9.50	15.10
g	M 12	M 24

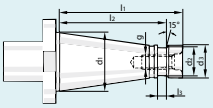
SK 40
for all Deckel machines with **external buttress threads.**



Cover

	SK 40
l 1	120
l 2	30
d 1	44.450
d 2	58
g	S 20×2

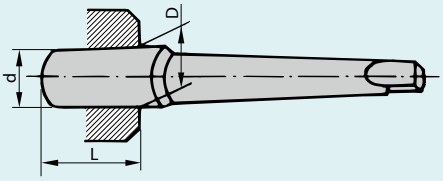
SK 40
with internal draw thread **with manual clamping** and with snap ring groove **for automatic clamping** (for example, Maho, Deckel, Mikron).



Similar to DIN 2080 with snap ring groove

	SK 40
l 1	93.40 ± 0.15
l 2	82.00 ± 0.15
l 3	7
d 1	44.45
d 2	21.10 – 0.10
d 3	25.00 – 0.08
g	M 16

Drill chuck spigots DIN 238 (June 1962 issue)



Spigot size	D mm	d mm	L mm	For combination with Morse taper	for drill chucks with clamping range	Largest clamping ∅ of the drill chuck
B6	6.350	5.85	10.00	MK0 - MK2	≤ 3 mm	
B10	10.094	9.40	14.50	MK0 - MK2	3 mm – 4 mm	8
B12	12.065	11.10	18.50	MK0 - MK2	6 mm - 8 mm	10
B16	15.733	14.50	24.00	MK1 - MK3	10 mm – 13 mm	16
B181)	17.431	16.20	32.00	MK1 - MK3	16 mm	16
B22	21.793	19.80	40.50	MK2 - MK4	20 mm	20
B24	23.825	21.30	50.50	MK3 - MK5	26 mm - 32 mm	26

1) Shortened version.

Garant HOLEX Pull stud

Material	Material condition	Machining condition	Advantages
GARANT = chrome-nickel steel **GARANT** No. 30 8605 / 8615=18CrNiMo7 **HOLEX** = 16 MnCr5	– High hardness (60 HRC) – High tensile strength – Tough core	– High radial run-out accuracy/ axial run-out accuracy – Functional faces ground – Thread true to gauge	– Shock-resistance – Reduced risk of breakage – Prevents tool skewing – Good surface finish on components

DIN 6359 | ≤3µm | HPC

Side lock arbors (Weldon) – DIN 69871

With Balluffchip bore.

30 0050 – All shanks burnished.

30 0048/0120/0210/0235/0271/0276/0298/0341/0346/0351 –
With coolant supply holes that can be plugged.

30 0120 – Special nickel plating.

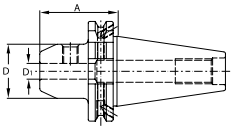
30 0048/0100/0120/0210/0230/0235/0270/0271/0275/0276/0285/0295/0298/0330/0341/0345/0346/0350/0351/0370 –
GARANT – All shanks hard turned (for smooth cutting action!).
Balancing quality G 2.5 / G 25,000 rpm·

30 0205/0225/0245/0255/0277/0315/0325/0335/0355 –
All shanks fine bead blasted. Balancing quality G 6.3 / 18,000 rpm.

30 0225/0255/0325 – **With cooling channel bores. Cannot be plugged.**

Application: For clamping tools with side flat to DIN 1835 B and DIN 6535 HB.

Optional extras: Pull studs (PS) No. 308600 – 308806. Pull stud wrenches No. 308820; 308835.



Form ADB | G 2.5 25000 min⁻¹

30 0230

Form ADB | G 2.5 25000 min⁻¹

30 0210

Form AD | G 6,3 18000 min⁻¹

30 0205

Optimised cooling concept

- 4 cooling channel bores instead of 2
- Different approach angles of the cooling channel bores

Form ADB | G 2.5 25000 min⁻¹

30 0120

Clamping ∅ D_1			mm	6	8	10	12	14	16	18	20	25	32	40
31A 30 0048	Garant	Side lock arbor Form ADB **with cooling channel bores**	SK 30 short	XXX	XXX	XXX	XXX	–	XXX	–	XXX	–	–	–
32A 30 0050	HOLEX	Side lock arbor Form AD	SK 30 short	XXX	XXX	XXX	XXX	–	XXX	–	XXX	–	–	–
31A 30 0100		Side lock arbor Form ADB	SK 40 short	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	–
31A 30 0120	Garant	Side lock arbor Form ADB **with cooling channel bores, nickel-plated**	SK 40 short	XXX	XXX	XXX	XXX	–	XXX	–	XXX	–	–	–
new 32A 30 0205	HOLEX	Side lock arbor Form AD	SK 40 short	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
31A 30 0210	Garant	Side lock arbor Form ADB **with cooling channel bores**	SK 40 short	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	–
new 32A 30 0225	HOLEX	Side lock arbor Form AD **with cooling channel bores**	SK 40 short	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
31A 30 0230	Garant	Side lock arbor Form ADB	SK 40 A = 100	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	–	–	–
31A 30 0235		Side lock arbor Form ADB **with cooling channel bores**	SK 40 A = 100	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	–	–	–
new 32A 30 0245	HOLEX	Side lock arbor Form AD	SK 40 A = 100	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	–	–	–
new 32A 30 0255		Side lock arbor Form AD **with cooling channel bores**	SK 40 A = 100	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	–	–	–
31A 30 0270		Side lock arbor Form ADB	SK 40 A = 130	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	–
31A 30 0271	Garant	Side lock arbor Form ADB **with cooling channel bores**	SK 40 A = 130	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	–
31A 30 0275		Side lock arbor Form ADB	SK 40 A = 160	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	–
31A 30 0276		Side lock arbor Form ADB **with cooling channel bores**	SK 40 A = 160	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	–
new 32A 30 0277	HOLEX	Side lock arbor Form AD	SK 40 A = 160	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	–
31A 30 0285		Side lock arbor Form ADB	SK 40 A = 200	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	–	–
31A 30 0295	Garant		SK 50 short	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	–
31A 30 0298		Side lock arbor Form ADB **with cooling channel bores**	SK 50 short	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	–
new 32A 30 0315	HOLEX	Side lock arbor Form AD	SK 50 short	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
new 32A 30 0325		Side lock arbor Form AD **with cooling channel bores**	SK 50 short	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
31A 30 0330	Garant	Side lock arbor Form ADB	SK 50 A = 100	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	–	–	–
new 32A 30 0335	HOLEX	Side lock arbor Form AD	SK 50 A = 100	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	–	–	–
31A 30 0341		Side lock arbor Form ADB **with cooling channel bores**	SK 50 A = 100	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	–	–	–
31A 30 0345		Side lock arbor Form ADB	SK 50 A = 130	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	–
31A 30 0346	Garant	Side lock arbor Form ADB **with cooling channel bores**	SK 50 A = 130	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	–
31A 30 0350		Side lock arbor Form ADB	SK 50 A = 160	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	–
31A 30 0351		Side lock arbor Form ADB **with cooling channel bores**	SK 50 A = 160	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	–
new 32A 30 0355	HOLEX	Side lock arbor Form AD	SK 50 A = 160	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	–
31A 30 0370	Garant	Side lock arbor Form ADB	SK 50 A = 200	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	–	–	–
Dimension A (30 0048, 30 0050, 30 0100, 30 0120, 30 0205, 30 0210, 30 0225)			mm	50	50	50	50	50	63	63	63	100	100	120
Dimension A (30 0295, 30 0298, 30 0315, 30 0325)			mm	63	63	63	63	63	63	63	63	80	100	120
∅ D			mm	25	28	35	42	44	48	50	52	65	72	80
Spare clamping screw 309900				6	8	10	12	12	16	16	20	25	32	32

DIN 6359 | DIN 69871 | ISO 7388-1 | Form ADB | G 2.5 25000 min^{-1} | ≤3µm | HPC | HSC

Garant Performance milling chuck

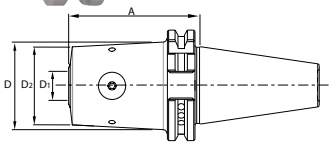
- With Balluffchip bore.
- All shanks hard turned.
- Supplied with 4 cooling channel bores.

Advantage:
- No risk of the cutter being pulled out, not even a tug.
- Optimised external contour – vibration-damping behaviour.
- Pleasant handling thanks to the differential thread.
- Breakage of the milling cutter shank is improbable.
- Precision version.

Application: For clamping tools with side drive flats to DIN 1835 Form B and DIN 6535 Form HB. Best suited for TPC milling or high feed rate applications. No risk of the cutter being pulled out, more precise radial run-out, **process reliability!**

Optional extras: Pull studs (PS) No. 308600 – 308806, PS wrenches No. 308820 – 308835.

30 0395



- *Spring in the base body presses the milling cutter or HB shank into the correct position.*
- *Contact piece on the tightening screw holds the milling cutter in the HB face.*

Clamping range ∅ D_1		mm	6	8	10	12	16	20
31A 30 0395	Performance milling chuck with cooling channel bore **Form ADB**	SK 40 short	XXX	XXX	XXX	XXX	XXX	XXX
new 31A 30 0398		SK 50 short	XXX	XXX	XXX	XXX	XXX	XXX
Dimension A		mm	50	50	50	50	63	63
∅ D		mm	22.5	25	32	37.5	43	46.5
∅ D_2 (30 0395)		mm	25.5	28	35	40.5	47.1	49.5
∅ D_2 (30 0398)		mm	26.7	29.2	36.2	41.7	47.1	50.6

DIN 6359 | DIN 69871 | ISO 7388-1 | Form ADB | G 2.5 25000 min^{-1} | ≤3µm | HPC

Garant Side lock arbors (Weldon) with carbide bushing – DIN 69871

Weldon arbors with precision carbide bush in the clamping bore. All shanks hard turned (for smooth running!). With coolant supply holes that can be plugged.

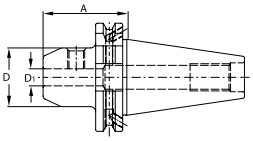
Advantage:
- Increased stability of the arbor.
- Radial run-out consistency for repetition accuracy.
- Quiet homogeneous machining noise.
- Increased tool life.

Application: For clamping tools with side flats to DIN 1835 B and DIN 6535 HB.

Optional extras: Pull studs (PS) No. 308600 – 308806, PS wrenches No. 308820 – 308835.

new

30 0216



			10	12	16	20
31P 30 0216	Side lock arbors with carbide bushing **and coolant channel bores**	SK 40 short	XXX	XXX	XXX	XXX
31P 30 0236		SK 40 short	XXX	XXX	XXX	XXX
31P 30 0306		SK 50 short	XXX	XXX	XXX	XXX
Dimension A (30 0216)		mm	50	50	63	63
Dimension A (30 0306)		mm	63			
∅ D		mm	35	42	48	52
Spare clamping screw 309900			10	12	16	20

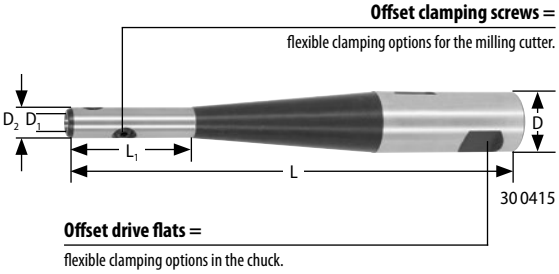
Garant Side lock arbor (Weldon), extra-slim

Cylindrical holder with Weldon shank and two clamping screws for clamping the tool. Through bored.

Advantage: Low interference contour due to slim design and variation of the clamped lengths.

Application: For clamping tools with side flat to DIN 1835 B and DIN 6535 HB.

Supplied with: Including insert screw No. 300416.



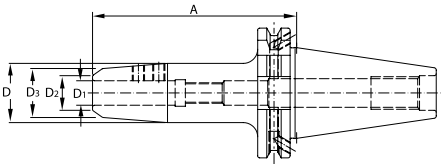
30 0415

Clamping range ∅ D_1		mm	6	8	10	12	14	16	18	20
31A 30 0415	Holder for Weldon shanks, cylindrical, slim		XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
∅ D		mm	20	20	20	20	20	25	25	32
L_1		mm	40	40	40	100	100	100	100	100
∅ D_2		mm	9.8	15	18	21	23	26	28	31
L		mm	150	150	150	150	150	156	156	160

DIN 6359 | DIN 69871 | ISO 7388-1 | Form ADB | G 2.5 25000 min^{-1} | ≤3µm | HPC

Garant® Side lock arbors Combi, slim version – DIN 69871

30 0422_12



Shanks hard turned (smooth cutting action). With Balluffchip bore.

Application: For clamping tools with plain shank to DIN 1835 Form B + E and DIN 6535 Form HB + HE.

Supplied with: With ball-jointed clamping screw **for Weldon and Whistle Notch systems** and through drilled back stop screw.

Optional extras: Pull studs (PS) No. 308600 – 308806, PS pull stud wrenches No. 308820 – 308835, spare clamping screw 309905 M6, 309905 M8.

Clamping range ∅ D_1		mm	6	8	10	12	14	16	18	20
31A 30 0422	Combination side lock arbor, slim **Form ADB**	**SK 40 A = 100**	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
∅ D		mm	28.33	30.33	32.28	34.22	36.22	38.22	40.38	42.53
∅ D_2		mm	13	15	16	17	19	21	23	25
∅ D_3		mm	18	20	21	22	24	26	28	30

DIN 6359 | ISO 7388-1 | Form AD | G 2.5 25000 min^{-1} | ≤3µm

Garant® Side lock arbors (Weldon), ultra-short – similar to DIN 69871

Size 25 – With only a single shorter locking screw.
Size 32 – Additionally with second locking screw in the slot.
Size 16; 20 – Locking screw in tool gripper groove.

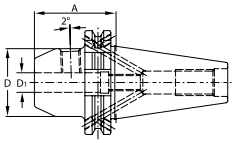
30 0410_16/_20

Clamping range ∅ D_1		mm	16	20	25	32
31A 30 0410	Side lock arbor **Form AD**	**SK 40 ultra short**	XXX	XXX	XXX	XXX
31A 30 0412		**SK 50 ultra short**	XXX	XXX	XXX	XXX
Dimension A		mm	35	40	60	70
∅ D (30 0410)		mm	48	50	65	72
∅ D (30 0412)		mm	69.9	69.9	64.5	71.5

DIN 6359 | DIN 69871 | ISO 7388-1 | Form ADB | G 6.3 25000 min^{-1} | ≤3µm | HPC

Garant® Whistle-Notch arbors – DIN 69871

30 0430_10



With back stop screw. Shanks hard turned (smooth cutting action). With Balluffchip bore.

Application: For clamping tools with parallel shank **and whistle notch shanks** (2°) to DIN 1835 E and DIN 6535 HE.

Optional extras: Pull studs (PS) No. 308600 – 308806. Pull stud wrenches No. 308820; 308835.

Clamping range ∅ D_1		mm	6	8	10	12	14	16	18	20	25	32
31A 30 0430	Whistle Notch arbor **Form ADB**	**SK 40 short**	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
31A 30 0450		**SK 50 short**	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
Dimension A (30 0430)		mm	50	50	50	50	50	63	63	63	100	100
Dimension A (30 0450)		mm	63	63	63	63	63	63	63	63	80	100
∅ D		mm	25	28	35	42	44	48	50	52	65	72
Spare clamping screw 309900			6	8	10	12	12	16	16	20	25	32

Garant® Performance milling chuck

GARANT milling chucks (precision version) ensure the following advantages:

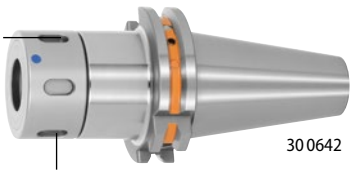
- No risk of the cutter being pulled out, not even when jerked
- Optimised external contour → vibration-damping behaviour.
- Thread self-locking, even when subjected to micro-vibrations.
- Pleasant handling thanks to the differential thread.
- Nasty surprises in the form of shank breakages are virtually fully excluded.

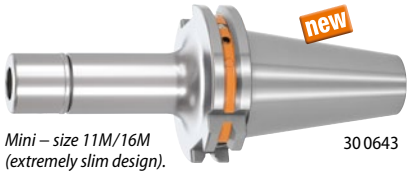
Contact piece on the tightening screw holds the milling cutter in the HB face.

Spring in the base body presses the milling cutter or HB shank into the correct position.

DIN 69871 | ISO 7388-1 | Form ADB | G 2.5 25000 min⁻¹ | ≤3µm | HSC | HPC

Garant HiRunER precision ER collet chuck – DIN 69871





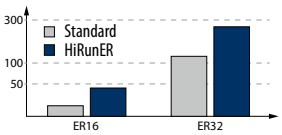
External and internal tapers are ground. All shanks are hard turned for a smooth cutting action. Including Balluffchip bore, high-performance clamping nut up to 25000 rpm.

Advantage:
- 3 µm radial run-out with a 2 µm clamping nut, 6 µm radial run-out with a 5 µm clamping nut.
- **Extremely strong holding force** (up to **factor 2**better than the standard ER chuck).
- **Vibration reduction effect** due to 2-part clamping nuts.

Supplied with: **Precision clamping nut.**

Optional extras: Pull studs (PS) No. 308600 – 308806, PS wrenches No. 308820 – 308835, ER collets No. 308901 – 309434, ER clamping wrenches No. 309748 – 309749, Fahrion ER collets 308901 – 309434.

Note:
- Clamps only nominal Ø up to shank Ø tolerance h 10.
- Do not use the clamping nut in combination with a sealing washer.
- Use in combination with Fahrion collets.



for ER collets		ER	11M (new)	16M (new)	16	25	32	40
31A 30 0642	HiRunER precision ER collet chuck	SK 40 A = 70	–	–	XXX	XXX	XXX	XXX
31A 30 0643		SK 40 A = 100	XXX	XXX	XXX	XXX	XXX	XXX
31A 30 0646		SK 50 A = 70	–	–	–	XXX	XXX	XXX
31A 30 0647		SK 50 A = 100	–	–	–	XXX	XXX	XXX
Clamping range		mm	1 – 7	0.5 – 10	0.5 – 10	1 – 16	2 – 20	3 – 26
Ø D		mm	16	24	34	44	52	62
Spare ER clamping nut 309617			–	–	16	25	32	40
Spare ER clamping nut 309618			11M	16M	–	–	–	–

- *Standard ER chuck*
- *Collet is not inserted 100 % in the chuck.*

- *HiRunER collet is fully seated in the chuck*
- *higher clamping forces!*
- *reduced radial run-out!*

DIN 69871 | ISO 7388-1 | G 2.5 25000 min⁻¹ | ≤5µm | HSC

Collet chucks, extra slim

- Taper ground internally and externally.
- Shanks hard turned.
- With Balluffchip bore.
- The collet is clamped by a threaded connection from behind **through** the chuck, **no clamping nut required.**

Advantage: Extremely slim design permits machining of components where access is difficult, e.g. for toolmaking and mould-making.

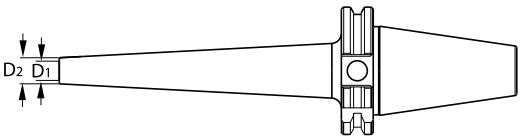
30 0772 – Large working range and optimised contour for reduced vibration. Cooling with the collet by the tool or along the shank.

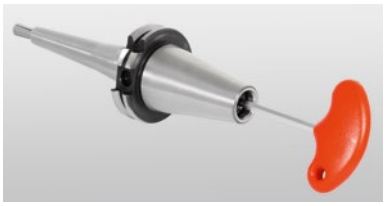
Application: For clamping tools with plain shank to DIN 6499.

Supplied with: Clamping screw and wrench with T-handle.

Optional extras: Pull studs (PS) No. 308600 – 308806, PS wrenches No. 308820 – 308835, **GARANT collets No. 309563, ALBRECHT collets No. 309572 – 309573.**

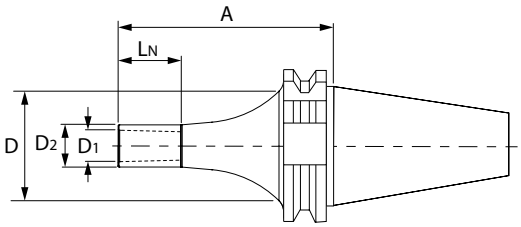
Form A





Clamping range			mm	2-6
31A 30 0782	Garant	Collet chuck, extra slim	SK 40 A = 120	XXX
31A 30 0784			SK 40 A = 160	XXX
31A 30 0783		Collet chuck, extra slim, with internal cooling	SK 40 A = 120	XXX
31A 30 0786			SK 40 A = 160	XXX
Ø D_1			mm	9.6
Ø D_2			mm	13
Ø D			mm	27

Form AD



Clamping range			mm	1-6
34F 30 0772	ALBRECHT Präzisions Spannfutter	Collet chuck, extra slim, with internal cooling	SK 40 A = 120	XXX
Ø D_1			mm	10.1
Ø D_2			mm	13.5
Ø D			mm	42
L_N			mm	20

DIN 69871 | ISO 7388-1 | ≤3µm | HSC

ER collet chuck – DIN 69871

Taper ground internally and externally. With Balluffchip bore.

30 0515 – Special nickel plating.

30 0463/0470/0510/0515/0525/0530/0545/0550/0570/0575/0610/0625 – **GARANT –**

- Balancing quality G2.5 / 25,000 rpm
- All shanks hard turned (for smooth running!).
- GARANT precision clamping nut, fine balanced (G 2.5 / 25,000 rpm) and coated, giving high clamping force and low wear.
- Through bored.

30 0465/0475/0505/0535/0555/0585/0615 – **HOLEX –**

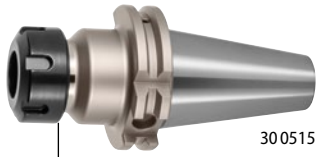
HOLEX precision clamping nut, balanced (G6.3 / 18,000 rpm, all shanks fine bead blasted. Balancing quality G6.3 / 18,000 rpm).

Application: For clamping tools with plain shank in collets to DIN 6499 – Form A and B.

Supplied with: Clamping nut.

Optional extras: Pull studs (PS) No. 308600 – 308806, PS pull stud wrenches No.308820 – 308835, ER pull stud wrenches No. 309680 – 309745, ER collets No. 308901 – 309449, ER clamping nuts No. 309615 (for sealing rings), sealing rings No. 309625 – 309645 (for No. 309615).

Form ADB | G 2.5 25000 min⁻¹



30 0515

Corrosion protection

Special surface treatment

Form ADB | G 2.5 25000 min⁻¹

30 0470

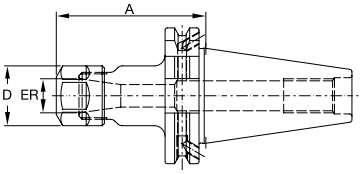
Form ADB | G 2.5 25000 min⁻¹

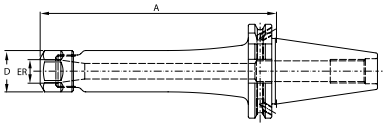
30 0530

for ER collets			ER	16	20	25	32	40
31A 30 0463	Garant	ER collet chuck **Form ADB**	**SK 30 short**	XXX	–	XXX	XXX	–
32A 30 0465	HOLEX	ER collet chuck **Form AD**	**SK 30 short**	XXX	–	XXX	XXX	–
31A 30 0470	Garant	ER collet chuck **Form ADB**	**SK 40 A = 70**	XXX	XXX	XXX	XXX	XXX
32A 30 0475	HOLEX	ER collet chuck **Form AD**	**SK 40 A = 70**	XXX	–	XXX	XXX	XXX
31A 30 0510	Garant	ER collet chuck **Form ADB**	**SK 40 A = 100**	XXX	–	XXX	XXX	XXX
31A 30 0515	Garant	ER collet chuck **Form ADB, nickel plated**	**SK 40 A = 70**	XXX	–	XXX	XXX	XXX
32A 30 0505	HOLEX	ER collet chuck **Form AD**	**SK 40 A = 100**	XXX	–	XXX	XXX	
31A 30 0525	Garant	ER collet chuck **Form ADB**	**SK 40 A = 130**	XXX	–	XXX	XXX	XXX
31A 30 0530	Garant		**SK 40 A = 160**	XXX	–	XXX	XXX	XXX
32A 30 0535	HOLEX	ER collet chuck **Form AD**	**SK 40 A = 160**	XXX	–	XXX	XXX	XXX
31A 30 0545	Garant	ER collet chuck **Form ADB**	**SK 40 A = 200**	XXX	–	XXX	XXX	XXX
31A 30 0550	Garant		**SK 50 A = 70**	XXX	–	XXX	XXX	XXX
32A 30 0555	HOLEX	ER collet chuck **Form AD**	**SK 50 A = 70**	XXX	–	XXX	XXX	XXX
31A 30 0570	Garant	ER collet chuck **Form ADB**	**SK 50 A = 100**	XXX	XXX	XXX	XXX	XXX
32A 30 0585	HOLEX	ER collet chuck **Form AD**	**SK 50 A = 100**	XXX	–	XXX	XXX	XXX
31A 30 0575	Garant	ER collet chuck **Form ADB**	**SK 50 A = 130**	XXX	–	XXX	XXX	XXX
31A 30 0610	Garant		**SK 50 A = 160**	XXX	–	XXX	XXX	XXX
32A 30 0615	HOLEX	ER collet chuck **Form AD**	**SK 50 A = 160**	XXX	–	XXX	XXX	XXX
31A 30 0625	Garant	ER collet chuck **Form ADB**	**SK 50 A = 200**	XXX	–	XXX	XXX	XXX
Clamping range			mm	0.5 – 10	1 – 13	1 – 16	2 – 20	3 – 26
Dimension A (30 0463, 30 0465)			mm	55	–	55	60	–
∅ D			mm	28	34	42	50	63
Spare high-speed nut GARANT No. 309610				16		25	32	40
Spare nut HOLEX 309580				16	20	25	32	40

Form AD | G 6,3 18000 min⁻¹

30 0475





ER collet chuck sets – maximum system accuracy

Supplied with: ER collet chuck with nut (No. 300470 size 16 or size 32), ER chuck key (No. 613300 size 25 or 309680 size 32) and ER collet (No. 308901, 308941 or 308981):
ER 16 (426 E): D = 2, 3, 4, 5, 6, 7, 8, 9 and 10 mm.
ER 25 (428 E): D = 3, 4, 5, 6, 8, 10, 12, 14 and 16 mm.
ER 32 (470 E): D = 4, 6, 8, 10, 12, 14, 16, 18 and 20 mm,
in a plastic case.

for ER collets		ER	16	25	32
37D 30 0630	ER collet chuck set	**SK 40**	XXX	XXX	XXX

30 0630_16

30 0630_32

DIN 69871 | ISO 7388-1 | G 2.5 25000 min⁻¹ | ≤6µm ER+CP | ≤3µm HP+CP | HSC

FAHRION® PRAZISION Precision ER collet chuck CENTRO P (CP) – DIN 69871

Form AD | Form ADB

Please order clamping nuts separately!

- External and internal tapers ground. With Balluffchip- bore.
- **Radial run-out and repetition accuracy 3µm** at 3 × D, maximum 50 mm.
- **Very high clamping forces** due to the collet fully seated in the chuck and coated clamping nut.
- **Vibration damping** due to the element collet and mass of the chuck.
- **Alternatively without seals** with ER CP clamping nut No. 309655 **or sealed system** with ER clamping nut CP for HP sealing rings No. 309665 in conjunction with HP sealing rings No. 309666 – 309668 (for internal coolant supply or as a dirt trap!).

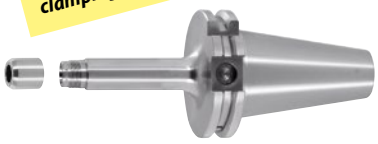
Advantage: Patented optimum seating of the collet, double guides, trapezoidal thread and low-friction coated clamping nut amalgamate when clamped into a sturdy unit, thus ensuring a very high degree of rigidity and precision.

Application: For high precision clamping of tools with plain shank.

Supplied with: **Without clamping nut**, without sealing rings.

Optional extras: Pull-studs (PS) No. 308600 – 308806, PS pull stud wrenches No. 308820; 308835, precision ER collets for HP No. 309368 – 309378, and for taps No. 309402 – 309418 (not for Holex), ER CP clamping nuts No. 309655; 309665, HP sealing rings No. 309666 – 309668. CP roller bearing wrenches No. 309754; 309756.

Note:
- CP chuck **clamps only nominal Ø up to shank Ø tolerance h10.**
- Use in combination with Fahrion collets.

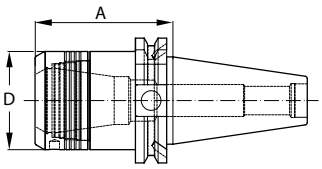


Mini *– size 11M/16M (extremely slim design).*

Tapered *– size 16C.*

Standard *– Sizes 16, 25 and 32.*

Type CP for ER			11M	16M	16C	16	16AD	25	25AD	32	32AD	40AD
33F 30 0686	Precision ER collet chuck **CENTRO P**	SK 40 short	–	–	–	–	–	XXX	–	XXX	–	–
33F 30 0687		SK 40 A = 70	XXX	XXX	–	XXX	XXX	XXX	XXX	XXX	XXX	XXX
33F 30 0688		SK 40 A = 100	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	–
33F 30 0689		SK 40 A = 160	XXX	XXX	(XXX)	XXX	–	(XXX)	–	XXX	–	–
33F 30 0692		SK 50 A = 100	–	–	–	–	–	–	–	(XXX)	–	–
Clamping range		mm	1 – 7	1 – 10	1 – 10	1 – 10	1 – 10	2 – 16	2 – 16	2 – 20	2 – 20	3 – 26
Dimension A (30 0686)		mm	–	–	–	–	–	45	–	50	–	–
Ø D		mm	16	22	24	30	30	40	40	50	50	63



DIN 69871 | ISO 7388-1 | Form ADB | G 2.5 25000 min⁻¹ | ≤3µm | HSC

Garant ER collet chuck with mini nut, slim version – DIN 69871

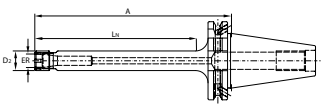
Clamping nut fine balanced **for HSC.** ER11 through bored. Shanks hard turned (smooth cutting action!).

Supplied with: High speed ER mini nut No. 309650.

Optional extras: ER collets No. 308881 – 309434, ER lock wrench No. 309740.

30 0665

for ER collets		ER	11	16	20	25
31A 30 0649	ER collet chuck mini / slim **Form ADB**	SK 40 A = 70	XXX	XXX	–	–
31A 30 0650		SK 40 A = 100	XXX	XXX	XXX	XXX
31A 30 0652		SK 40 A = 130	XXX	XXX	XXX	XXX
31A 30 0665		SK 40 A = 160	XXX	XXX	XXX	XXX
31A 30 0667		SK 50 A = 100	XXX	XXX	–	XXX
31A 30 0669		SK 50 A = 160	XXX	XXX	–	XXX
Clamping range		mm	0.5 – 7	0.5 – 10	1 – 13	1 – 16
Ø D		mm	16	22	28	35
L_N (30 0649)		mm	44	45	–	–
L_N (30 0650)		mm	70	70	73	74
L_N (30 0652)		mm	101	101	103	104
L_N (30 0665)		mm	130	80	73	80
L_N (30 0667)		mm	66	66	–	71
L_N (30 0669)		mm	126	70	–	85
suitable clamping wrench 309740			11	16	20	25



G 2.5 25000 min^{-1} | ≤3µm | HSC

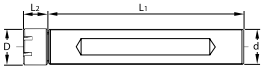
ER collet holder for extending the reach of side lock arbors or collet chucks

30 0682 – Fahrion CENTRO P cylindrical holder **without clamping nuts.**
30 0684 – Cylindrical holder with ER nut.
30 0683/0685 – Cylindrical holder with Weldon shank and ER nut.

Optional extras:
30 0682 – ER collets No. 309365 – 309372, Spare ER mini nuts No. 309655; 309665.
30 0683–0685 – ER collets No. 308878 – 309434, Spare ER nuts No. 309580; 309650.

Note: 30 0682/0684 Size 8 – No length adjustment available.

30 0685



30 0685

30 0682

Please order clamping nuts separately!

30 0683

30 0684

for ER collets			ER	8	11	16	20	25	32	40
31A 30 0685	Garant	ER mini collet holder **cylindrical**		–	XXX	XXX	XXX	–	–	–
33F 30 0682	FAHRION PRAZISION	CENTRO P ER collet holder **cylindrical**		XXX	XXX	XXX	–	–	–	–
32A 30 0683	HOLEX	ER collet holder **cylindrical**		–	–	–	XXX	XXX	XXX	XXX
32A 30 0684	HOLEX	ER mini collet holder **cylindrical**		XXX	XXX	XXX	XXX	–	–	–
∅ d (30 0682, 30 0683)			mm	10	16	16	25	25	32	40
Clamping range			mm	1 – 5	0.5 – 7	0.5 – 10	1 – 13	1 – 16	2 – 20	3 – 26
∅ D (30 0685, 30 0682, 30 0683)			mm	10	16	22	28	42	50	63
∅ D (30 0684)			mm	12	16	22	28	–	–	–
∅ d (30 0685)			mm	–	16	20	25	–	–	–
∅ d (30 0684)			mm	12	16	20	20	–	–	–
L_1 (30 0685)			mm	–	150	140	140	–	–	–
L_1 (30 0682, 30 0683)			mm	138	133	117	60	65	70	75
L_1 (30 0684)			mm	70	140	140	140	–	–	–
L_2 (30 0685)			mm	–	19	23	24	–	–	–
L_2 (30 0682, 30 0683)			mm	10	17	33	24	28	32	40
L_2 (30 0684)			mm	15.6	19	23	29.5	–	–	–

DIN 69871 | ISO 7388-1 | Form AD | G 2.5 25000 min^{-1} | ≤3µm | HSC

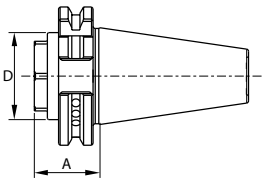
Garant ER collet chuck, ultra-short – DIN 69871

Taper ground internally and externally. **Ultra-short type with internal precision clamping nut.**
Best suited to working in restricted working areas, with higher stability.

Application: For clamping tools with parallel shank in collets to DIN 6499 Form A and B.
Supplied with: ER clamping nut (internal).
Optional extras: ER collets No. 308941 – 309448, Pull studs (PS) No. 308600 – 308806, PS wrenches No. 308820 – 308835.

Note: Matching clamping nut No. 309621.

30 0445



for ER collets		ER	25	32
31A 30 0445	ER collet chuck, ultra-short	SK 40	XXX	XXX
31A 30 0446		SK 50	–	XXX
Dimension A		mm	25	30
∅ D		mm	32	40

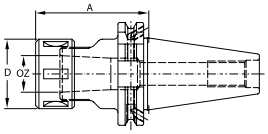
DIN 69871 | ISO 7388-1 | Form ADB | G 2.5 25000 min^{-1} | ≤3µm

Garant OZ collet chuck – DIN 69871

External and internal taper ground.
Ball-bearing power-clamping nut. For higher clamping force and improved radial run-out.
GARANT –
With Balluffchip bore. All shanks hard turned (for smooth running!). Clamping nut balanced (G 2.5 / 25,000 rpm).

Application: For clamping tools with plain shank in collets to DIN 6388 - Form A and B.
Supplied with: Clamping nut
Optional extras: Pull studs (PS) No. 308600 – 308806, PS wrench No. 308820; 308835, OZ collets No. 309540 – 309565, Hook spanner No. 628400.

30 0695



Clamping range		mm	2-16	2-25
31A 30 0695	OZ collet chuck **Form ADB**	SK 40 A = 70	XXX	XXX
∅ D		mm	43	60
Spare clamping nut 309670			2 – 16	2 – 25
suitable hook spanner 628400			40 / 42	58 / 62

DIN 69871 | ISO 7388-1 | Form AD | G 6.3 15000 min^{-1} | ≤5µm | HPC

Heavy-duty chuck – DIN 69871

- Low friction due to needle bearings.
- Protected with anti-corrosion coating.
- Dust-tight and watertight.
- Very high clamping force prolongs tool life and improves surface quality.
- Flexible clamping range by means of collets.

30 0788 – **Clamping force up to 150 Nm at ∅ 12, 300 Nm at ∅ 16 and 400 Nm at ∅ 20.** Balancing quality **G2.5 at 15,000 rpm**.

30 0775/0778 – **Clamping force up to 900 Nm.**

30 0785/0787 – ■ **Clamping force up to 1000 Nm at ∅ 20, 4000 Nm at ∅ 32.**
■ Centred tool clamping with optimum concentricity.
■ **Internal coolant feed.**

Application: For clamping tools with plain shanks.

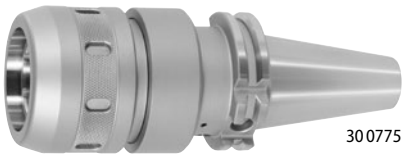
Supplied with: Clamping nut.

Optional extras: Pull studs No. 308600 – 308806.

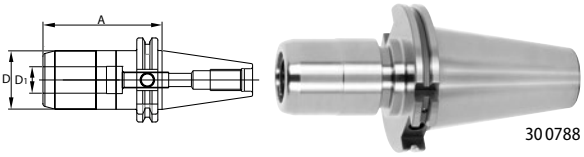
30 0788 – Collets No. 309581 – 309582.

30 0775/0778 – Collets No. 309566 – 309570.

30 0785/0787 – Collets No. 309575 – 309576.


30 0775

30 0785

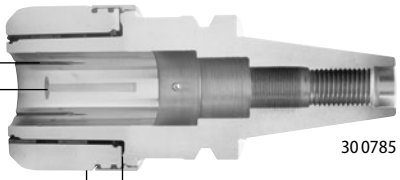


30 0788

∅ D_1			mm	12	16	20	32
32A 30 0788	HOLEX	Heavy-duty chuck **slim**	SK 40	XXX	XXX	XXX	–
32A 30 0775	HOLEX	Heavy-duty chuck	SK 40	–	–	XXX	XXX
32A 30 0778	HOLEX	Heavy-duty chuck	SK 50	–	–	XXX	XXX
33K 30 0785	NT TOOL	Heavy-duty chuck	SK 40	–	–	XXX	XXX
33K 30 0787	NT TOOL	Heavy-duty chuck	SK 50	–	–	XXX	XXX
Dimension A (30 0788, 30 0775, 30 0778, 30 0785)			mm	70	70	90	105
Dimension A (30 0787)			mm	–	–	105	105
∅ D (30 0788)			mm	30	38	44	–
∅ D (30 0775, 30 0778)			mm	–	–	52	66
∅ D (30 0785, 30 0787)			mm	–	–	52	73
suitable hook spanner 628400 (30 0775, 30 0778, 30 0785, 30 0787)				–	–	52 / 55	68 / 75
suitable tightening wrench 309747 (30 0788)				S10	S16	S20	–

T-slots collect the oil and grease.

Internal axial recesses effectively prevent the tool slipping.


30 0785

Absolutely smooth running of the clamping nut.

High radial stiffness due to repetition accuracy of the clamping compared to flat face contact seating.

DIN 69871 | ISO 7388-1 | Form AD | G 2.5 25000 min^{-1} | ≤5µm | HPC

Garant Heavy-duty chuck with security function – ISO 12164-1 (DIN 69893-1)

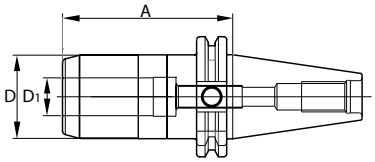
- Shanks hard turned (smooth cutting action).
- Very high clamping force prolongs tool life and improves surface quality.
- Centred tool clamping with optimum concentricity.
- Integral length adjustment screw.
- Internal coolant feed.

Advantage: HB (Weldon) flat provides quick and easy protection against the milling cutter pulling out. Positive connection between the milling cutter and arbor. Compact vibration-optimised contour.

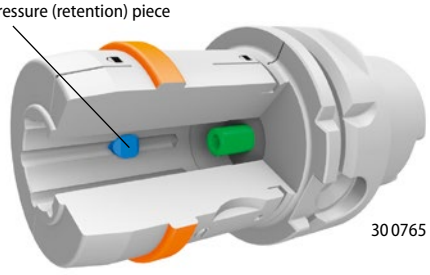
Application: For clamping tools with parallel shank and HB flat. Ideally suited for heavy-duty machining (HPC, TPC).

Supplied with: Clamping nut.

30 0765



Pressure (retention) piece


30 0765

∅ D_1			mm	12	16	20
31A 30 0765	Heavy-duty chuck **with security function**	SK 40		XXX	XXX	XXX
31A 30 0767	Heavy-duty chuck **with security function**	SK 50		XXX	XXX	XXX
Dimension A (30 0765)			mm	70	73	76
Dimension A (30 0767)			mm	74	77	80
∅ D			mm	40	45	50
Clamping force up to			N·m	430	520	900
suitable hook spanner 628400				40/42	45/50	45/50

DIN 6358 | DIN 69871 | ISO 7388-1 | HPC

Combination face mill adapters

Taper shank, spigot, and all contact surfaces ground at the collar. With Balluffchip bore.

30 0835/0845/0885/0895/0910/0930/0950/0985/0990/1010 – **GARANT** –All shanks hard turned (for smooth cutting action!).

30 0837/0875/0975 –All shanks fine bead blasted.

Application:
- With drive key for mills **with longitudinal keyway, e. g. DIN 841.**
- With face mill drive ring for face mills **with cross keyway, DIN 1880 and cutter heads to DIN 1830.**

Supplied with: Drive key, face mill drive ring, and lock screw.

Optional extras: Pull studs (PS) No. 308600 – 308806, PS wrenches No. 308820 – 308835, Special toggle spanner No. 309840.

≤5µm

Form ADB

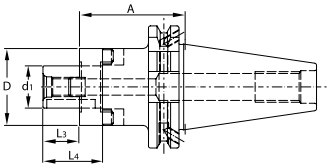
G 2.5 25000 min⁻¹

30 0835

Form A

G 6,3 18000 min⁻¹

≤6µm



new

30 0875

Spigot ∅ d_1			mm	13	16	22	27	32	40
31A 30 0835	Garant	Combination face mill adapter **Form ADB**	SK 40 short	XXX	XXX	XXX	XXX	XXX	XXX
new 32A 30 0837	HOLEX	Combination face mill adapter **Form A**	SK 40 short	–	XXX	XXX	XXX	XXX	XXX
31A 30 0845	Garant	Combination face mill adapter **Form ADB**	SK 40 A = 100	–	XXX	XXX	XXX	XXX	XXX
new 32A 30 0875	HOLEX	Combination face mill adapter **Form A**	SK 40 short	–	XXX	XXX	XXX	XXX	XXX
31A 30 0885			SK 40 A = 130	–	XXX	XXX	XXX	XXX	XXX
31A 30 0895			SK 40 A = 160	–	XXX	XXX	XXX	XXX	XXX
31A 30 0910	Garant	Combination face mill adapter **Form ADB**	SK 40 A = 200	–	XXX	XXX	XXX	XXX	XXX
31A 30 0930			SK 50 A = 55	–	XXX	XXX	XXX	XXX	XXX
31A 30 0950			SK 50 A = 100	–	XXX	XXX	XXX	XXX	XXX
new 32A 30 0975	HOLEX	Combination face mill adapter **Form A**	SK 50 A = 100	–	XXX	XXX	XXX	XXX	XXX
31A 30 0985			SK 50 A = 130	–	XXX	XXX	XXX	XXX	XXX
31A 30 0990	Garant	Combination face mill adapter **Form ADB**	SK 50 A = 160	–	XXX	XXX	XXX	XXX	XXX
31A 30 1010			SK 50 A = 200	–	XXX	XXX	XXX	XXX	XXX
Dimension A (30 0835, 30 0837)			mm	55	55	55	55	60	60
∅ D			mm	27	32	40	48	58	70
L_3			mm	18	17	19	21	24	27
L_4			mm	23	27	31	33	38	41
Spare milling cutter lock screw 309860				13	16	22	27	32	40
Spare face mill drive ring 309870				13	16	22	27	32	40
suitable special toggle spanner 309840				13	16	22	27	32	40

DIN 6357 | ≤3µm

HOLEX

Face mill arbor extension

Mounting spigot, bore and all contact surfaces are ground at the collar.

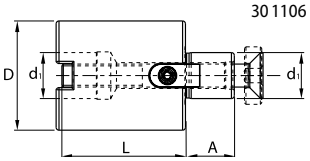
Application: For flexible extensions of face mill arbors. Economy alternative to expensive custom-made arbors. 3 options for use: short (45 mm) or long (70 mm) extension or maximum extension by combining two short extensions (2×45 mm).

Supplied with: Suitable lock screw.

Optional extras: Special toggle spanner No. 309840,
Spare screws No. 301107; 301108; 301111,
Spare screw No. 301109 to take 2 short extensions (2×45 mm),
Washer No. 301112.

30 1105

30 1106



Spigot ∅ d_1		mm	16	22	27	32	40
32B 30 1105	Face mill arbor extension **short**		XXX	XXX	XXX	XXX	XXX
32B 30 1106	Face mill arbor extension **long**		XXX	XXX	XXX	XXX	XXX
∅ D		mm	38	48	60	78	89
L (30 1105)		mm			45		
L (30 1106)		mm			70		
A		mm	17	19	21	24	27

DIN 6357 | ≤3µm

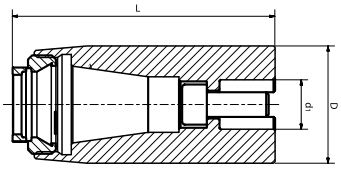
Measuring head/collet adapter ER

Bore, contact face at collar and ER collet seat ground, body hard turned for best radial run-out and balancing characteristics. For the shortest possible overhang with internal clamping nut (optionally for use with a sealing washer). Through-bored tightening screw for through-coolant supply.

Application: Very flexible and economical solution, turns any milling head arbor into a collet chuck.
Supplied with: Supplied with ER clamping nut (internal), tightening screw.
Optional extras: Sealing rings No. 309630 / 9635.

Note: Matching clamping nut No. 309621.

30 1113



Spigot ∅ d_1		mm	16	22	27
31A 30 1113	Adapter **ER measuring head / collet**		XXX	XXX	XXX
for ER collets			25	32	32
∅ D		mm	38	48	60
L		mm	78	92	94

DIN 6357 | DIN 69871 | ISO 7388-1 | HPC

Form ADB | G 2.5 25000 min^{-1} | ≤5µm

Milling head arbors – DIN 69871

- From clamping Ø 40 with 4 tapped holes for face mills to DIN 2079.
- Taper shank, spigot, and all contact surfaces ground at the collar.
- Short series.
- Increased collar contact surface.
- With Balluffchip bore.

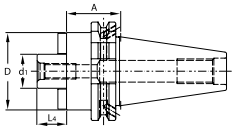
30 1013/1015/1025/1030/1035/1070/1075/1090/1130/1135/1150/1154 –
- With **4 cooling channel bores.**
- All shanks hard turned (for smooth running!).

30 1017/1027/1097 – All shanks fine bead blasted.

Supplied with: Lock screw
Optional extras: Pull studs (PS) No. 308600 – 308806, PS wrenches No. 308820 – 308835, Special toggle spanner No. 309840.

30 1015

Form A | G 6,3 18000 min^{-1} | ≤6µm



30 1017

Spigot ∅ d_1			mm	16	22	27	32	40	50	60	
31A 30 1013	Garant	Milling head arbor **Form ADB with cooling channel bores**	SK 30 short	XXX	XXX	XXX	–	–	–	–	
31A 30 1015	Garant	Milling head arbor **Form ADB with cooling channel bores**	SK 40 short	XXX	XXX	XXX	XXX	XXX	–	–	
32A 30 1017	HOLEX	Milling head arbor **Form A**	SK 40 short	XXX	XXX	XXX	XXX	XXX	–	–	new
31A 30 1025	Garant	Milling head arbor **Form ADB with cooling channel bores**	SK 40 medium	XXX	XXX	XXX	XXX	XXX	–	–	
31A 30 1030	Garant	Milling head arbor **Form ADB with cooling channel bores**	SK 40 A = 100	XXX	XXX	XXX	XXX	XXX	–	–	
32A 30 1027	HOLEX	Milling head arbor **Form A**	SK 40 short	XXX	XXX	XXX	XXX	–	–	–	new
31A 30 1035	Garant	Milling head arbor **Form ADB with cooling channel bores**	SK 40 A = 120	XXX	XXX	XXX	XXX	XXX	–	–	
31A 30 1070	Garant	Milling head arbor **Form ADB with cooling channel bores**	SK 40 A = 160	–	XXX	XXX	XXX	XXX	–	–	
31A 30 1075	Garant	Milling head arbor **Form ADB with cooling channel bores**	SK 40 A = 200	–	XXX	XXX	XXX	XXX	–	–	new
31A 30 1090	Garant	Milling head arbor **Form ADB with cooling channel bores**	SK 50 short	XXX	XXX	XXX	XXX	XXX	XXX	–	
32A 30 1097	HOLEX	Milling head arbor **Form A**	SK 50 short	–	XXX	XXX	XXX	XXX	XXX	XXX	new
31A 30 1130	Garant	Milling head arbor **Form ADB with cooling channel bores**	SK 50 A = 100	–	XXX	XXX	XXX	XXX	–	–	
31A 30 1135	Garant	Milling head arbor **Form ADB with cooling channel bores**	SK 50 A = 120	–	XXX	XXX	XXX	XXX	–	–	
31A 30 1150	Garant	Milling head arbor **Form ADB with cooling channel bores**	SK 50 A = 160	–	XXX	XXX	XXX	XXX	XXX	–	
31A 30 1154	Garant	Milling head arbor **Form ADB with cooling channel bores**	SK 50 A = 200	–	XXX	XXX	XXX	XXX	–	–	new
Dimension A (30 1013)			mm	50	50	50	–	–	–	–	
Dimension A (30 1015, 30 1090)			mm	35	35	35	50	50	70	–	
Dimension A (30 1017, 30 1097)			mm	35	35	40	50	50	70	70	
Dimension A (30 1025)			mm	60	60	60	70	70	–	–	
∅ D (30 1013, 30 1015, 30 1025, 30 1030, 30 1027, 30 1035, 30 1070, 30 1075)			mm	38	48	50	78	89	–	–	
∅ D (30 1017, 30 1097)			mm	38	48	58	78	88	128	128	
∅ D (30 1090, 30 1130, 30 1135, 30 1150, 30 1154)			mm	38	48	60	78	89	120	–	
L_4			mm	17	19	21	24	27	30	40	
Spare milling cutter lock screw 309860				16	22	27	32	40	50	60	
suitable special toggle spanner 309840				16	22	27	32	40	50	60	

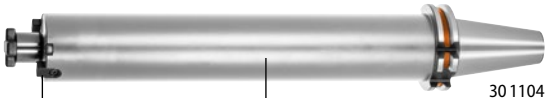
DIN 6357 | DIN 69871 | ISO 7388-1 | G 6.3 8000 min^{-1} | HPC

Garant Milling head arbors, vibration damped

- Shank, spigot, and all contact surfaces are ground at the collar.
- With Balluffchip bore.
- Larger collar contact face.
- **Vibration damped version, arbor with vibration-damping core.**

Supplied with: Cutter lock screw and drive dog.

Optional extras: Pull studs (PS) No. 308600 – 308806, PS wrenches No. 308820 – 308835, Special toggle spanner No. 309840.



High-performance version with embedded heavy metal core

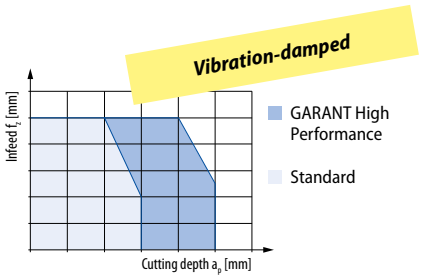
Advantage: The heavy metal core specially matched to the arbors gives optimum machining results even with long overhangs:

- Saves time, because allows use of the maximum machining parameters.
- Smooth running and thus perfect surface quality results.
- Saves costs, because tool life is increased.
- Less vibrational stress on the machine headstock.

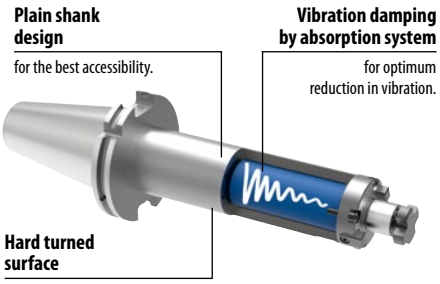
Note: Balance quality G 6.3 dependent on the maximum operating speed.

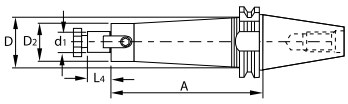
≤5µm

Form AD



Spigot ∅ d1		mm	16	22	27
31H 30 1101	High-Performance milling head arbor **vibration-damped, cylindrical with cooling channel bores**	SK 40 A = 200	XXX	XXX	–
31H 30 1102		SK 40 A = 300	XXX	XXX	–
31H 30 1103		SK 50 A = 200	XXX	XXX	XXX
31H 30 1104		SK 50 A = 300	XXX	XXX	XXX
∅ D		mm	38	48	58
L_4		mm	17	19	21
n_{max} (30 1101)		rpm	8000	5500	–
n_{max} (30 1102)		rpm	4500	3500	–
n_{max} (30 1103)		rpm		8000	
n_{max} (30 1104)		rpm	6000	5500	5000





With heavy metal core

Vibration damped version, arbor with vibration-damping core.

Advantage: Significantly lower tendency to vibrate. Considerable increase in feed rate.

Note: Further sizes on request.

≤6µm

Spigot ∅ d_1		mm	16	22	27	32	40
31A 30 1133	Milling head arbor **tapered**	SK 40 A = 200	XXX	XXX	XXX	–	–
31A 30 1134		SK 40 A = 300	XXX	XXX	–	–	–
31A 30 1136	Milling head arbor **cylindrical**	SK 40 A = 200	XXX	XXX	XXX	–	–
31A 30 1137		SK 40 A = 300	XXX	XXX	XXX	–	–
31A 30 1138	Milling head arbor **cylindrical, with cooling channel bore**	SK 40 A = 200	XXX	XXX	XXX	–	–
31A 30 1139		SK 40 A = 300	XXX	XXX	–	–	–
31A 30 1143	Milling head arbor **tapered**	SK 50 A = 200	XXX	XXX	XXX	–	–
31A 30 1144		SK 50 A = 300	XXX	XXX	XXX	XXX	–
31A 30 1145		SK 50 A = 400	XXX	XXX	XXX	–	–
31A 30 1146	Milling head arbor **cylindrical**	SK 50 A = 200	XXX	XXX	XXX	–	–
31A 30 1147		SK 50 A = 300	XXX	XXX	XXX	XXX	XXX
31A 30 1148		SK 50 A = 400	XXX	XXX	XXX	–	–
31A 30 1151	Milling head arbor **cylindrical, with cooling channel bore**	SK 50 A = 200	XXX	XXX	XXX	–	–
31A 30 1152		SK 50 A = 300	XXX	XXX	XXX	XXX	–
∅ D (30 1133, 30 1134)		mm	50	50	50	–	–
∅ D (30 1143, 30 1144, 30 1145)		mm	80	80	80	80	–
∅ D_2		mm	38	48	58	78	89
L_4		mm	17	19	21	24	28

DIN 69871 | ISO 7388-1 | ≤8µm

Reducing adapter for tools with MT shanks – DIN 69871

- Ground internally and externally.
- With Balluffchip bore.

Optional extras: Pull studs (PS) No. 308600 – 308806, PS wrenches No. 308820 – 308835.

30 1155

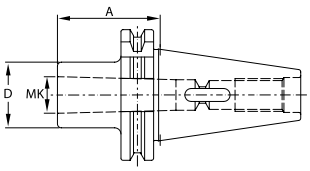
30 1165

For MT tools with tang

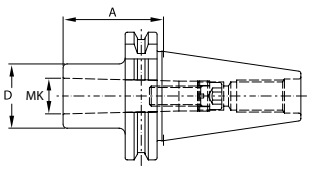
Form AD | G 6.3 12000 min⁻¹

30 1155/1170 – **GARANT** –All shanks hard turned (for smooth cutting action!).
30 1165/1185 – All shanks fine bead blasted.

MT internal				1	2	3	4
31A 30 1155	Garant	MT reducing adapter with tang, Form AD	SK 40 short	XXX	XXX	XXX	XXX
new 32A 30 1165	HOLEX		SK 40 short	XXX	XXX	XXX	XXX
31A 30 1170	Garant		SK 50 short	–	XXX	XXX	XXX
new 32A 30 1185	HOLEX		SK 50 short	–	XXX	XXX	XXX
Dimension A (30 1155, 30 1165)		mm		50	50	70	95
Dimension A (30 1170, 30 1185)		mm		–	60	65	95
∅ D		mm		25	32	40	48



30 1245



For MT tools with draw thread

Form A | G 6,3 18000 min⁻¹

All shanks fine bead blasted.

MT internal				1	2	3	4
new 32A 30 1245	HOLEX	MT reducing adapter Form A	SK 40 short	XXX	XXX	XXX	XXX
new 32A 30 1255			SK 50 short	–	XXX	XXX	XXX
Dimension A (30 1245)		mm		50	50	70	95
Dimension A (30 1255)		mm		–	60	65	70
∅ D		mm		25	32	40	48

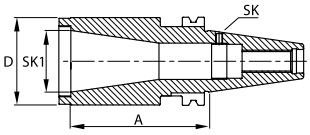
DIN 69871 | ISO 7388-1 | Form A | G 2,5 15000 min⁻¹ | ≤5µm

Garant Intermediate adapter / reducing adapter – DIN 69871

Supplied with: Integral grub screw for tools with short taper arbors.
Optional extras: Pull studs (PS) No. 308600 – 308806. Pull stud wrenches No. 308820; 308835.

30 1272

Short taper SK / SK 1				40/40	50/40	50/50
31A 30 1272	Intermediate sleeve		SK 40	XXX	–	–
31A 30 1273			SK 50	–	XXX	XXX
Dimension A		mm		100	70	120
∅ D		mm		63	70	97



DIN 69871 | ISO 7388-1 | Form AD | G 6.3 8000 min⁻¹ | ≤3µm

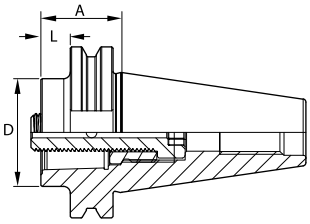
Garant Reducing adapter for tools with PSC shank – DIN 69871

Ground internally and externally. The internal thread provided for the coolant tube in the PSC toolholder is plugged with the socket-head screw incorporated in the adapter. The clamping screw incorporates a through hole, so the system is suitable for internal coolant feed.

Suitable for: Tool arbor with **polygonal shank (PSC) – ISO 26623-1**.
Application: For adaption from SK to PSC.
Optional extras: Pull studs (PS) No. 308600 – 308806. Pull stud wrenches No. 308820; 308835.

30 1275

PSC inner				4	5	6	8
31Z 30 1275	Reducing adapter for PSC shank		SK 40	XXX	XXX	–	–
31Z 30 1276			SK 50	–	–	XXX	XXX
Dimension A		mm		30	40	80	70
∅ D		mm		40	50	63	80
L		mm		11	11	61	51

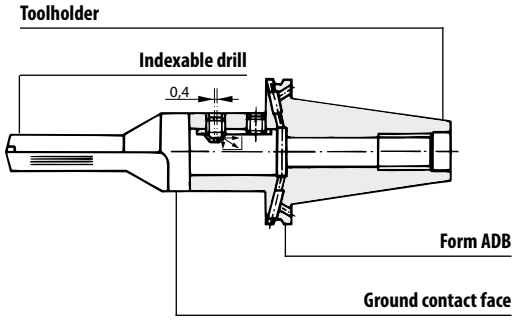


DIN 69871 | ISO 7388-1 | Form ADB | G 2.5 25000 min^{-1}

Garant® Arbor for indexable drills – DIN 69871

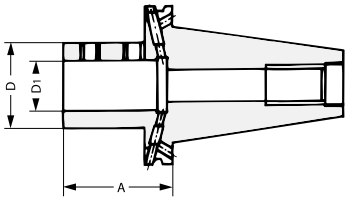
- Position of the threaded pin for countersinking in the indexable drill offset by 0.4 mm.
- **When tightening** the increased contact face ∅ is clamped against the front face of the arbor.
- **Better support,** allowing **higher feed rates.**
- **High concentricity** thanks to the mating surface being ground flat to 3µm.
- With Balluffchip bore.

Suitable for: All indexable drills with parallel shank to DIN 6595, Part 1.
Application: **For mounting all standard indexable drills to DIN 6595, Part 1.**
Optional extras: Pull studs (PS) No. 308600 – 308806. Pull stud wrenches No. 308820; 308835.



30 1285

for shank ∅ D_1		mm	20	25	32	40
31A 30 1285	Arbor for indexable drills Form ADB	SK 40	XXX	XXX	XXX	XXX
31A 30 1287		SK 50	XXX	XXX	XXX	XXX
Dimension A (30 1285)		mm	65	70	75	115
Dimension A (30 1287)		mm	70	70	75	80
∅ D (30 1285)		mm	40	45	52	60
∅ D (30 1287)		mm	40	45	52	60



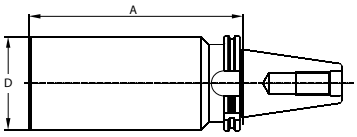
DIN 69871 | ISO 7388-1 | Form A

HOLEX® Boring bar blanks for making special tools – DIN 69871

Taper arbor and collar hardened and ground.
Material: 16 MnCr5
Optional extras: Pull studs (PS) No. 308600 – 308806. Pull stud wrenches No. 308820; 308835.

30 1301

A dimension		mm	250	315
32A 30 1301	Boring bar blank Form A	SK 40	XXX	–
32A 30 1302		SK 50	–	XXX
∅ D		mm	63	97

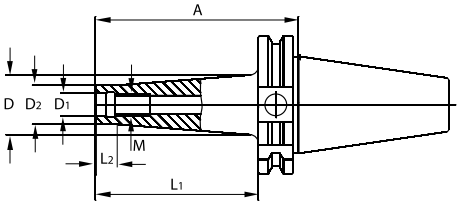


DIN 69871 | ISO 7388-1 | Form AD | G 2.5 25000 min^{-1} | ≤3µm | HSC

Garant® Arbors for threaded copy milling cutters – DIN 69871

30 1313

Vibration damped version, arbor with vibration-damping core.
Application: To take screw-in milling cutters with thread.
Optional extras: Pull studs (PS) No. 308600 – 308806, PS pull stud wrenches No. 308820 – 308835.



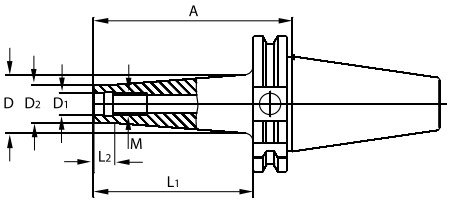
Thread M×length L1	31A 30 1313	31A 30 1314	Dimension A	∅ D_1	∅ D_2	∅ D	L_1	L_2
	Arbor for screw-in milling cutters with thread							
	SK 40	SK 50	mm	mm	mm	mm	mm	mm
M10×181	XXX	–	200	10.5	18	35	181	7
M10×231	XXX	–	250	10.5	18	41	231	7
M12×181	XXX	–	200	12.5	21	38	181	7.5
M12×231	XXX	–	250	12.5	21	44	231	7.5
M16×231	XXX	–	250	17	29	48	231	7.5
M12×281	–	XXX	300	12.5	21	49	281	7.5
M16×281	–	XXX	300	17	29	57	281	7.5

DIN 69871 | ISO 7388-1 | Form ADB | G 2.5 25000 min^{-1} | ≤3µm | HSC

Garant Arbors for threaded copy milling cutters – DIN 69871

30 1307 – **Vibration damped version, arbor with vibration-damping core**.
30 1309 – Plain design.
30 1303–1307/1316 – Tapered design.
Application: To take screw-in milling cutters with thread.
Optional extras: Pull studs (PS) No. 308600 – 308806, PS wrenches No. 308820 – 308835.

30 1307

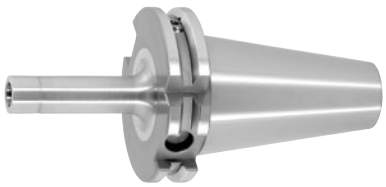


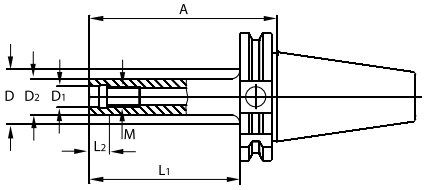
30 1303

new

Thread M × Length L_1	31A 30 1316	31A 30 1307	31A 30 1303	31A 30 1304	Dimension A	Ø D_1 tolerance IT6	Ø D_2	Ø D	L_1	L_2	
	Arbor for screw-in milling cutters with thread									30 1316 30 1307 30 1303	30 1304
		vibration damped									
	SK 30	SK 40	SK 40	SK 50	mm	mm	mm	mm	mm	mm	mm
M6×25	XXX	–	XXX	–	44	6.5	10	13	25	5	–
M8×25	XXX	–	XXX	–	44	8.5	13	15	25	5	–
M8×50	–	–	XXX	XXX	69	8.5	13	23	50	5	5
M8×75	–	XXX	XXX	–	94	8.5	13	23	75	5	–
M8×100	–	XXX	XXX	–	119	8.5	13	25	100	5	–
M10×5	–	–	XXX	–	25	10.5	18	18	5	5	–
M10×25	XXX	–	XXX	–	44	10.5	18	20	25	5	–
M10×50	–	–	XXX	XXX	69	10.5	18	23	50	5	5
M10×75	–	–	XXX	–	94	10.5	18	27	75	5	–
M10×100	–	XXX	XXX	XXX	119	10.5	18	32	100	5	10
M10×150	–	XXX	XXX	XXX	169	10.5	18	36.5	150	5	10
M12×5	–	–	XXX	–	25	12.5	21	21	5	5	–
M12×25	XXX	–	XXX	–	44	12.5	21	24	25	5	–
M12×50	–	–	XXX	XXX	69	12.5	21	24	50	5	5
M12×75	–	–	XXX	–	94	12.5	21	31	75	5	–
M12×100	–	XXX	XXX	XXX	119	12.5	21	33	100	5	10
M12×150	–	XXX	XXX	XXX	169	12.5	21	40	150	5	10
M16×5	–	–	XXX	–	25	17	29	29	5	5	–
M16×25	XXX	–	XXX	–	44	17	29	29	25	5	–
M16×50	–	–	XXX	XXX	69	17	29	34	50	5	5
M16×75	–	–	XXX	–	94	17	29	34	75	5	–
M16×100	–	–	XXX	XXX	119	17	29	36	100	5	10
M16×150	–	XXX	XXX	XXX	169	17	29	42.5	150	5	10
M16×200	–	XXX	–	–	219	17	29	45	200	5	–

Thread M × Length L_1	31A 30 1309	Dimension A	Ø D_1 tolerance IT6	Ø D_2	Ø D	L_1	L_2
	Arbor for screw-in milling cutters with thread						
	SK 40	mm	mm	mm	mm	mm	mm
M5×25	(XXX)	44	5.5	10	13	25	5
M6×25	XXX	44	6.5	10	13	25	5
M8×25	XXX	44	8.5	13	15	25	5
M8×50	XXX	69	8.5	13	23	50	5
M8×75	XXX	94	8.5	13	23	75	5
M10×25	XXX	44	10.5	18	20	25	5
M10×50	XXX	69	10.5	18	23	50	5
M10×100	XXX	119	10.5	18	32	100	5
M10×125	XXX	144	10.5	18	34	125	5
M10×150	XXX	169	10.5	18	36.5	150	5
M12×25	XXX	44	12.5	21	24	25	5
M12×50	XXX	69	12.5	21	24	50	5
M12×75	XXX	94	12.5	21	31	75	5
M12×100	XXX	119	12.5	21	33	100	5
M12×125	XXX	144	12.5	21	34	125	5
M12×150	XXX	169	12.5	21	40	150	5
M16×25	XXX	44	17	29	29	25	5
M16×50	XXX	69	17	29	34	50	5
M16×75	XXX	94	17	29	34	75	5
M16×100	XXX	119	17	29	36	100	5
M16×150	XXX	169	17	29	42.5	150	5



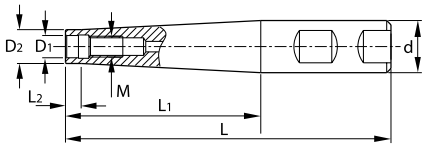


HOLEX Tool arbors for threaded copy mills

Shank tolerance h6.

Application: For mounting in side lock arbors (Weldon).

Weldon arbors



30 1347

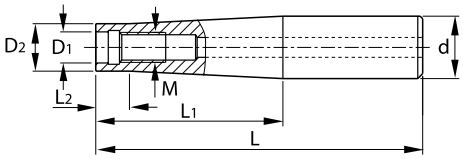
Thread M × Length L_1	32A 30 1338 new	32A 30 1346	32A 30 1347	32A 30 1349	32A 30 1351	Ø D_1	Ø D_2	L	L_1	L_2
	Weldon arbor for screw-in milling cutters with internal coolant supply									
	Ø d = 12 mm	Ø d = 16 mm	Ø d = 20 mm	Ø d = 25 mm	Ø d = 32 mm	mm	mm	mm	mm	mm
M5×20	XXX	–	–	–	–	5.5	10	65	20	5
M6×25	–	–	XXX	–	–	6.5	10	75	25	5
M8×40	–	XXX	–	–	–	8.5	13	88	40	6
M10×25	–	–	XXX	–	–	10.5	18	80	25	20.2
M10×97	–	–	XXX	–	–	10.5	18	152	97	81.4
M12×40	–	–	–	XXX	–	12.5	21	101	40	24
M12×105	–	–	–	–	XXX	12.5	21	170	105	24
M12×109	–	–	–	XXX	–	12.5	21	170	109	67

HOLEX Tool arbors for threaded copy mills

Plain arbor

Shank tolerance h6.

Application: For shrink-fit chucking.



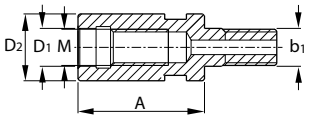
30 1353

Thread M × Length L_2	32A 30 1353	32A 30 1354	32A 30 1357	Ø D_1	Ø D_2	L	L_1	L_2
	Plain arbor for screw-in milling cutters							
	Ø d = 20 mm	Ø d = 25 mm	Ø d = 32 mm	mm	mm	mm	mm	mm
M10×67	XXX	–	–	10.5	18	160	68.7	67
M12×54	–	–	XXX	12.5	21	160	54	23
M12×77	–	XXX	–	12.5	21	240	87.5	77
M12×134	–	–	XXX	12.5	21	300	134	59.5
M16×66	–	–	XXX	17	29	160	68.7	66
M16×146	–	–	XXX	17	29	300	148.7	146

Extension and reducing adapters

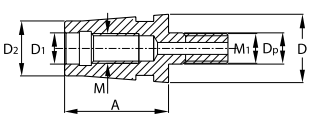
Thread M × A dimension	32A 30 1358	Dimension A	Ø D	Ø D_1
	Extension for screw-in milling cutters	mm	mm	mm
M8×30	XXX	30	13.5	8.5
M10×35	XXX	35	18	10.5
M12×40	XXX	40	21	12.5
M16×40	XXX	40	29	17

30 1358



Thread M / Thread M1	32A 30 1359	Dimension A	Ø D	Ø D_1	Ø D_p	Ø D_2
	Reducer for screw-in milling cutters	mm	mm	mm	mm	mm
M5/M8	XXX	30	13	5.5	8.5	10
M8/M10	XXX	30	18	8.5	10.5	13.5
M10/M12	XXX	35	21	10.5	12.5	18.5
M10/M16	XXX	60	29	10.5	17	18.5
M12/M16	XXX	60	29	12.5	17	21

30 1359



Densimet tool arbors for threaded copy mills

- Vibration-damping characteristics.
- Shank tolerance h6.

Application: Particularly for use in shrink-fit chucks.

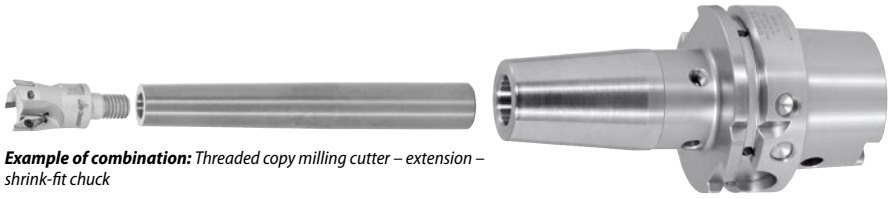
30 1376

Thread M × L_{tot}	31A 30 1373	31A 30 1374	31A 30 1376	31A 30 1378	31A 30 1379	Ø D_1	Ø D_2	L_1
	Densimet tool arbor for screw-in milling cutters							
	Ø d = 12 mm	Ø d = 16 mm	Ø d = 20 mm	Ø d = 25 mm	Ø d = 32 mm	mm	mm	mm
M6×105	XXX	–	–	–	–	6.5	10	60
M8×88	–	XXX	–	–	–	8.5	14	40
M8×128	–	XXX	–	–	–	8.5	14	80
M8×168	–	XXX	–	–	–	8.5	14	120
M10×110	–	–	XXX	–	–	10.5	18	60
M10×150	–	–	XXX	–	–	10.5	18	100
M10×190	–	–	XXX	–	–	10.5	18	140
M12×131	–	–	–	XXX	–	12.5	22	75
M12×181	–	–	–	XXX	–	12.5	22	125
M12×231	–	–	–	XXX	–	12.5	22	175
M16×160	–	–	–	–	XXX	17	30	100
M16×260	–	–	–	–	XXX	17	30	200
M16×360	–	–	–	–	XXX	17	30	300

Solid carbide extensions for threaded copy mills

Solid carbide extension with vibration-damping properties, shank tolerance h6, long and slim version.

Application: Particularly for use in shrink-fit chucks. Perfect combination of standard steel extensions and Densimet extensions.



Example of combination: *Threaded copy milling cutter – extension – shrink-fit chuck*

30 1364

Thread M × L_{tot}	31Z 30 1361	31Z 30 1362	31Z 30 1364	31Z 30 1366	31Z 30 1368	Ø D	L_1
	Solid carbide extension for screw-in milling cutters						
	Ø d = 12 mm	Ø d = 16 mm	Ø d = 20 mm	Ø d = 25 mm	Ø d = 32 mm	mm	mm
M6×70	XXX	–	–	–	–	9.8	21
M6×110	XXX	–	–	–	–	9.8	60
M8×95	–	XXX	–	–	–	12.8	40
M8×135	–	XXX	–	–	–	12.8	80
M8×175	–	XXX	–	–	–	12.8	120
M10×100	–	–	XXX	–	–	17.8	40
M10×140	–	–	XXX	–	–	17.8	80
M10×180	–	–	XXX	–	–	17.8	120
M12×136	–	–	–	XXX	–	23	80
M12×176	–	–	–	XXX	–	23	120
M12×216	–	–	–	XXX	–	23	160
M16×160	–	–	–	–	XXX	29	100
M16×260	–	–	–	–	XXX	29	200
M16×360	–	–	–	–	XXX	29	300

≤3µm HSC

Screw-in adapter

For clamping tools with plain shanks.

Suitable for: Tool arbors for threaded copy mills.

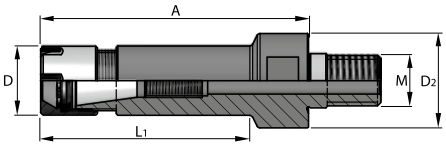
Supplied with: Clamping nut

Note: Suitable extension and reducer under No. 301358 / 1359.

Screw-in adapter with mini clamping nut

Optional extras: ER collets No. 308901 – 309430.
ER collet clamping nuts No. 309650; 309652.

30 1382



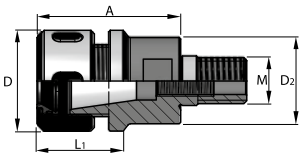
Thread M × A dimension	31Z 30 1382	31Z 30 1387	∅ D		∅ D_2	L_1
	Screw-in adapter for collets		30 1382	30 1387		
	ER16	ER25	mm	mm	mm	mm
M12×45	XXX	–	22	–	23	28
M16×50	XXX	XXX	22	35	30	30
M16×85	XXX	–	22	–	30	65
M16×90	–	XXX	–	35	30	70

Screw-in adapter with plain bearing clamping nut

With plain bearing clamping nut. Higher clamping forces thanks to reduced friction.

Optional extras: ER collets No. 308901 – 309425.
ER clamping nut No. 309612.

30 1392



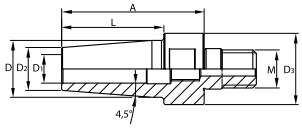
Thread M × A dimension	31Z 30 1392	∅ D	∅ D_2	L_1
	Screw-in adapter for collets			
	ER16	mm	mm	mm
M16×50	XXX	32	30	30

≤3µm

Screw-in shrink adapter

High-temperature steel, integral length adjustment of the tools, extra slim design, for HSS and carbide.

Application: Flexible use on the most demanding applications for accuracy and balancing speed, e.g. In combination with extensions.



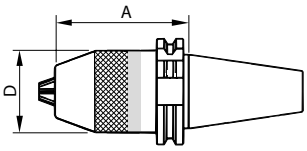
Thread M × clamping ∅ D_1		M10×6	M10×8	M12×6	M12×8	M12×10	M12×12	M16×8	M16×10	M16×12
31Z 30 1397	Screw-in shrink adapter	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
Dimension A	mm	55	55	60	60	60	60	60	60	60
∅ D	mm	21	21	21	21	24	24	21	24	24
∅ D_2	mm	15	15	15	15	18	18	15	18	18
∅ D_3	mm	18.5	18.5	23	23	23	23	30	30	30
L	mm	37	37	42	42	38	38	42	42	42
maximum tightening torque	N·m	40	40	60	60	60	60	80	80	80

DIN 69871 | ISO 7388-1

Short drill chucks – with chuck key operation – DIN 69871

For clockwise and anticlockwise rotation.

Optional extras: Pull studs (PS) No. 308600 – 308806. Pull stud wrenches No. 308820; 308835.



GARANT - Precision short drill chucks

≤50 bar | ≤20µm | ≤14 Nm

With Balluffchip bore. Maximum radial run-out **≤ 20 µm.**

30 1465 Size 0,3-10 – Slim design for the most popular ∅ up to 10.2 mm.

30 1425/1435 – Sandblasted and ground.

30 1425/1435 – ■ **slim** design.
■ targeted coolant transfer to tools with IC.
■ Optimum holding torques at the tool.

30 1465/1467 – Glass bead blasted.

Supplied with:

30 1425/1435 – **Torx® chuck key** with T-handle **for high clamping force.**

30 1465/1467 – **Clamping wrench** with T-handle.

Clamping range				mm	0,3-8	0,3-10	0,5-13	1-16	0,5-16
31B 30 1425	Garant	Short drill chuck Form AD	SK 40		XXX	–	XXX	XXX	–
31B 30 1435			SK 50		–	–	–	XXX	–
31B 30 1465		Short drill chuck Form AD/B	SK 40		–	XXX	–	–	XXX
31B 30 1467			SK 50		–	–	–	–	XXX
Type					slim	slim	slim	slim	Standard
Dimension A (30 1425, 30 1435, 30 1465)				mm	70	73	76	80	90
Dimension A (30 1467)				mm	–	–	–	–	106
∅ D				mm	35	38	43	50	57
Spare Torx® screwdriver 625220					TX25	–	TX25	TX25	–
Spare hexagon screwdriver 627425					–	4 AF	–	–	SW 6

≤14 Nm | Form AD | G 2.5 25000 min⁻¹

30 1425_0.3–8 slim

≤14 Nm | Form AD | G 2.5 25000 min⁻¹

30 1425_0.5-13 slim

≤14 Nm | Form AD | G 2.5 25000 min⁻¹

30 1425_1-16 slim

WEZEL / WTE - Short drill chuck

Form A

Supplied with: Hexagon screwdriver with T-handle.

Clamping range				mm	0,3-8	0,5-13	1-13	2,5-16
33W 30 1478	WTE	Short drill chuck Form A	SK 30		–	XXX	–	–
37D 30 1480			SK 40		–	–	XXX	XXX
33W 30 1490	WTE		SK 40		XXX	XXX	–	XXX
37D 30 1500			SK 50		–	–	(XXX)	(XXX)
Dimension A (30 1478, 30 1480)				mm	–	111	87.5	104.5
Dimension A (30 1490)				mm	70	90	–	95
Dimension A (30 1500)				mm	–	–	87.5	106.5
∅ D (30 1478, 30 1480, 30 1500)				mm	–	50	43	56
∅ D (30 1490)				mm	36	50	–	57
Spare hexagon screwdriver 627425					SW4	6AF	SW6	SW6

Form A

30 1465_0,3-10

30 1465_0,5-16

≤14 Nm | G 2.5 18000 min⁻¹

30 1480_1-13

HOLEX – Short drill chuck

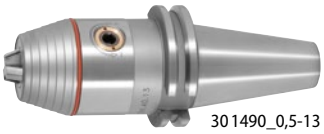
Form A | G 6.3 15000 min⁻¹ | ≤50µm | ≤14 Nm

Burnished. With Balluffchip bore.

Supplied with: **Torx® chuck key** with T-handle **for high clamping force.**

Clamping range				mm	2,5-16
32K 30 1565	HOLEX	Short drill chuck Form A	SK 40		XXX
32K 30 1575			SK 50		XXX
Dimension A				mm	80
∅ D				mm	50
Spare Torx® screwdriver 625220					TX25

≤30µm | G 2.5 25000 min⁻¹



30 1490_0,5-13

30 1565_2,5-16

DIN 69871 | ISO 7388-1 | G 2.5 25000 min⁻¹ | ≤3µm | HPC | HSC

Garant Slim 3° hydraulic chuck

- **Extremely slim design** (3° contour)
- Processed surface structure.
- With Balluffchip bore.
- Axial length adjustment facility.
- Shanks hard turned.
- Reducing adapters can be used.

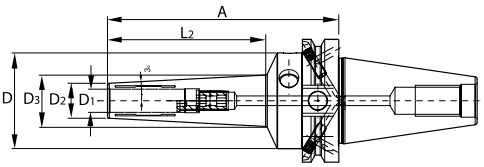
Application: Especially for tool and mould making. **Wherever reduced interference contours are required.** For drilling, reaming, and milling. For clamping tools with shank tolerance h6.

Supplied with: Hexagon key with T-handle.

Optional extras: Pull studs (AB) No. 308600 – 308806, AB pull stud wrenches No. 308820 / 308835, Reducing sleeves No. 302135 – 302180.

Form ADB

30 2093



Form ADB

30 2095

Clamping range ∅ D_1		mm	3	4	5	6	8	10	12	16	20
31A 30 2091	Slim hydraulic chuck	SK 30 A = 80	XXX	XXX	XXX	XXX	XXX	XXX	XXX	–	–
31A 30 2089		SK 40 A = 80	–	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
31A 30 2093		SK 40 A = 120	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
31A 30 2095		SK 40 A = 160	–	–	–	XXX	XXX	XXX	XXX	–	–
31A 30 2096		SK 40 A = 200	–	–	–	XXX	XXX	XXX	XXX	–	–
∅ D_2 (30 2091, 30 2093)		mm	9	10	11	16	14	20	18	24	28
∅ D_2 (30 2089)		mm	–	10	11	12	14	16	18	24	28
∅ D_2 (30 2095, 30 2096)		mm	–	–	–	16	18	20	22	–	–
∅ D_3 (30 2091, 30 2089)		mm	13.2	14.2	15.3	16.3	18.3	20.4	22.4	–	–
∅ D_3 (30 2093)		mm	17.4	18.4	19.4	20.4	22.4	24.5	26.6	32.3	36.4
∅ D_3 (30 2095)		mm	–	–	–	34.4	35.4	37.1	38.7	–	–
∅ D_2 (30 2096)		mm	–	–	–	38.7	39.7	41.4	43	–	–
∅ D (30 2091)		mm	40	40	40	40	40	40	40	–	–
∅ D (30 2089, 30 2093, 30 2095, 30 2096)		mm					49.5				
L_2 (30 2091)		mm	40	40	41	41	41	42	42	–	–
L_2 (30 2089)		mm	–	40	40	40	40	41	42	40	45
L_2 (30 2093)		mm	80	80	80	80	80	81	82	79	80
L_2 (30 2095)		mm	–	–	–	119	119.5	121	122	–	–
L_2 (30 2096)		mm	–	–	–	160.5	160.5	162	163	–	–

Garant Slotted reducing adapter with cooling – for HD chuck

With cooling channel slots.

Application:
- For drilling, reaming, milling, and tool sharpening.
- For clamping ∅ reduction.
- Radial run-out ±5 µm (system accuracy at 3×d).
- Radial run-out ±2 µm (for reducing sleeve).
- Higher clamping forces than with direct clamping.

30 2155

Clamping range ∅ D_1		mm	3	4	5	6	8	10	12	14	16	18	20	25
31A 30 2135	Slotted reducing adapter	∅ 12 mm	XXX	XXX	XXX	XXX	XXX	–	–	–	–	–	–	–
31A 30 2155		∅ 20 mm	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	–	–	–
31A 30 2175		∅ 32 mm	–	–	–	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX

Slotted reducing adapter – for HD chuck

Sealed (rubber plug).

Application:
- For drilling, reaming, milling, and tool sharpening.
- For clamping ∅ reduction.
- Radial run-out ±5 µm (system accuracy at 3×d).
- Radial run-out ±2 µm (for reducing sleeve).
- Higher clamping forces than with direct clamping.

30 2140

Clamping range ∅ D_1		mm	3	4	5	6	8	10	12	14	16	18	20	25
37D 30 2140	Slotted reducing adapter	∅ 12 mm	XXX	XXX	XXX	XXX	XXX	–	–	–	–	–	–	–
37D 30 2160		∅ 20 mm	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	–	–	–
37D 30 2180		∅ 32 mm	–	–	–	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX

DIN 69871 | ISO 7388-1 | Form ADB | ≤3µm | HSC | HPC

Hydraulic chucks, version HT (High Torque) – DIN 69871

- Very high total rigidity due to optimised design.
- With Balluffchip bore.
- Axial length adjustment available (travel 10 mm).
- Flexible due to the use of reducing sleeves.

Application:
- For drilling, reaming, and milling.
- For **heavy-duty milling.**
- Very high transmitted torques **550 Nm,** version HT (High Torque).
- **Ideal damping characteristics,** resulting in optimum surface finishes, increased tool life and spindle protection.

Optional extras: Pull studs (PS) No. 308600 – 308806. PS pull stud wrenches No. 308820 – 308835, Sleeves No. 302135 – 302180.

G 2.5 25000 min^{-1}

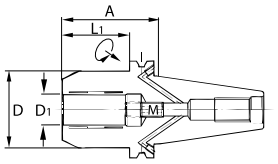
30 2028

G 2.5 20000 min^{-1}

30 2027

Clamping range ∅ D_1			mm	12	16	20	32
31H 30 2028		HD chuck **short, version HT**	SK 40	XXX	–	XXX	–
31H 30 2029			SK 50	XXX	–	XXX	XXX
31H 30 2031	Garant	HD chuck **short, version HT with cooling channel bores**	SK 40	XXX	XXX	XXX	–
32A 30 2027	HOLEX	HD chuck **short, version HT**	SK 40	–	–	XXX	–
32A 30 2037			SK 50	–	–	XXX	–
Dimension A			mm	50	64.5	64.5	81
∅ D (30 2028, 30 2029, 30 2031)			mm	42	46	49	72
∅ D (30 2027, 30 2037)			mm	–	–	49.5	–
L_1			mm	31	45.5	45.5	62
suitable reducing adapter				302140 / 302135	–	302160 / 302155	302180 / 302175

new new



WTE Hydraulic chuck extension

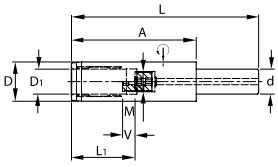
With axial length adjustment. Flexible due to use of reducing sleeves.

Application: Suitable for hydraulic chucks and collet chucks.

Optional extras: Sleeves No. 302155; 302160; 302175; 302180.

30 2375

Shank ∅ d / Clamping range ∅ D_1			mm	20/12	20/20	32/20
33W 30 2375	Hydraulic chuck extension	L = 150 mm		XXX	XXX	(XXX)
Dimension A			mm	100	100	90
∅ D			mm	25	31.5	31.5
L_1			mm	46	51	51
M				M10x1	M16×1	M16×1
V			mm		10	



DIN 69871 | ISO 7388-1 | Form AD | G 2.5 25000 min^{-1} | ≤3µm | HSC

WTE Comp-R hydraulic chuck

- **Concentricity adjustable to 0 µm.**
- Axial length adjustment, adjustment travel 10 mm.
- With Balluffchip bore.

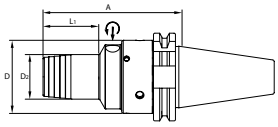
Application: Perfect chuck for where maximum concentricity levels are required:
- Reaming.
- Drilling (especially small diameters).
- Use of delicate, expensive tools.
- For clamping of shank tolerance h6.

Optional extras: Reducing sleeves No. 302135 – 302180, parallel wipers No. 343720, pull studs (PS) No. 308600 – 308806, PS wrenches No. 308820 – 308835.

Allows the use of a reducing adapter.

30 2036

Clamping range ∅ D_1			mm	20
33W 30 2036	Comp-R hydraulic chuck **Adjustable radial run-out**	SK 40		(XXX)
33W 30 2056		SK 50		(XXX)
Dimension A (30 2036)			mm	130
Dimension A (30 2056)			mm	110
∅ D_2			mm	42
∅ D			mm	52.5
L_1			mm	50



DIN 69871 | ISO 7388-1 | ≤3µm | HSC

Hydraulic chuck (HD chuck) – DIN 69871

- **Radial run-out ≤ 3 µm.**
- With Balluffchip bore.
- Axial length adjustment (adjustment 10 mm) available.
- Flexible due to the use of reducing sleeves.
- Coolant pressure up to 80 bar.

Application: For drilling, reaming and finish milling.

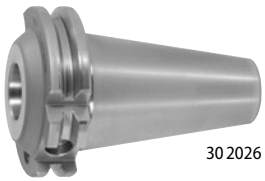
Supplied with:

30 2026–2085 – Hexagon socket drive with T-handle.

Optional extras: Pull studs (PS) No. 308600 - 308806, PS wrenches No. 308810 – 308830, size 12, 20, 32: Sleeve reducer No. 302135 – 302180.

30 2001/2021/2026/2030/2032/2038/2052 – Back stop screws for direct clamping / use of reducing sleeves on request.

Form AD | G 2.5 25000 min^{-1}



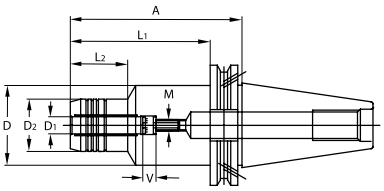
30 2026

Form ADB | G 2.5 25000 min^{-1}

30 2038

Form ADB | G 2.5 20000 min^{-1}

30 2045



Form ADB | G 2.5 25000 min^{-1}

30 2001

Form ADB | G 2.5 20000 min^{-1}

30 2085

Clamping range ∅ D_1			mm	6	8	10	12	16	20	25	32
33W 30 2030	WTE	HD chuck **short, slim, Form AD**	SK 30	(XXX)	(XXX)	(XXX)	XXX	(XXX)	(XXX)	–	–
33W 30 2001		HD chuck **short, heavy, Form ADB**	SK 40	–	–	–	–	–	XXX	–	–
32A 30 2005	HOLEX		SK 40	–	–	–	–	–	XXX	–	–
33W 30 2026	WTE	HD chuck **ultra-short form AD**	SK 40 A=24.5	–	–	–	–	–	XXX	–	–
33W 30 2032			SK 40	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
31A 30 2038	Garant	HD chuck **short, slim, Form ADB**	SK 40	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
32A 30 2045			SK 40	XXX	XXX	XXX	XXX	XXX	XXX	–	–
32A 30 2085	HOLEX	HD chuck **short, slim, Form ADB**	SK 40	XXX	XXX	XXX	XXX	XXX	XXX	–	–
33W 30 2021	WTE	HD chuck **short, heavy, Form ADB**	SK 50	–	–	–	–	–	–	–	(XXX)
32A 30 2025	HOLEX		SK 50	–	–	–	–	–	–	–	XXX
33W 30 2052	WTE	HD chuck **short, slim, Form ADB**	SK 50	(XXX)	XXX	XXX	XXX	XXX	XXX	XXX	XXX
32A 30 2058	HOLEX	HD chuck **short, heavy, Form ADB**	SK 50	–	–	XXX	XXX	XXX	XXX	XXX	–
Dimension A (30 2030)			mm	55	55	55	55	90	90	–	–
Dimension A (30 2001, 30 2005, 30 2021, 30 2025)			mm	–	–	–	–	–	64.5	–	81
Dimension A (30 2032, 30 2038, 30 2045, 30 2058)			mm	80.5							
Dimension A (30 2085)			mm	110	110	110	110	110	110	–	–
Dimension A (30 2052)			mm	80.5	80.5	80.5	80.5	80.5	80.5	100	100
∅ D_2 (30 2030, 30 2026, 30 2032, 30 2038, 30 2045, 30 2085, 30 2052, 30 2058)			mm	26	28	30	32	38	42	55	63
∅ D (30 2030)			mm	45	45	45	45	45	45	–	–
∅ D (30 2001, 30 2005, 30 2026, 30 2045, 30 2085, 30 2021, 30 2025, 30 2058)			mm	49.5	49.5	49.5	49.5	49.5	49.5	–	72
∅ D (30 2032, 30 2038, 30 2052)			mm	49.5	49.5	49.5	49.5	49.5	49.5	63	70
L_1 (30 2030)			mm	36	36	36	36	71	71	–	–
L_1 (30 2001, 30 2005, 30 2021, 30 2025)			mm	–	–	–	–	–	42	–	52
L_1 (30 2032, 30 2038, 30 2045, 30 2058)			mm	61.5							
L_1 (30 2085)			mm	91	91	91	91	91	91	–	–
L_1 (30 2052)			mm	61.5	61.5	61.5	61.5	61.5	61.5	81	81
L_2 (30 2030)			mm	20	20	21	22	50	50	–	–
L_2 (30 2026, 30 2032, 30 2038)			mm	29.5	30	35	40	45	47	28	25.5
L_2 (30 2045, 30 2085)			mm	29.5	30	31	31.5	33	34	–	–
L_2 (30 2052, 30 2058)			mm	29.5	30	35	40	45	42	48	61
V (30 2030, 30 2026, 30 2032, 30 2038, 30 2045, 30 2085, 30 2052, 30 2058)			mm	10							
M (30 2030)				M5	M6	M8×1	M8×1	M8×1	M8×1	–	–
M (30 2026, 30 2032, 30 2038, 30 2045, 30 2085, 30 2052, 30 2058)				M5	M6	M8×1	M10×1	M12×1	M16×1	M16×1	M16×1
suitable reducing adapter				–	–	–	302140	–	302160 / 302155	–	302180

DIN 69871	ISO 7388-1	Form ADB	G 2.5 25000 min^{-1}	≤3µm	HSC	HPC

WTE HPH (High Performance Holder) – DIN 69871

Very high total rigidity due to optimised design. With Balluffchip bore. Suitable for minimum quantity lubrication.

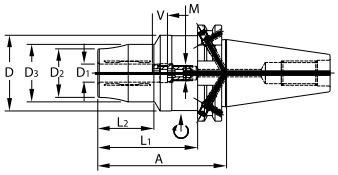
Advantage:
- **Very high transmitted torque,** providing high process reliability.
- **Ideal damping characteristics,** resulting in optimum surface finishes, increased tool life and spindle protection.

Application:
- **Especially for heavy-duty milling.**
- For clamping tools with shank tolerance h6.

Supplied with: Hexagon cross-bar wrench.

Optional extras: Pull studs (PS) No. 308600 – 308806. PS wrenches No. 308810 – 308830. Reducing sleeves No. 302135 – 302180, for size 12, 20 and 32.

30 2190



Clamping range ∅ D_1			mm	6	8	10	12	14	16	18	20	25	32
33W 30 2190	HPH chuck	SK 40		XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	(XXX)
Dimension A			mm	75	75	80	85	85	90	90	95	110	120
∅ D			mm	50									
L_1			mm	56	56	61	66	66	71	71	76	91	101

Shrink-fit chuck with retainer function

30 2312/2314 –
- High-temperature steel.
- Integral tool length adjustment, adjustment 5 mm.
- For carbide tools.
- All shanks hard turned (for a smooth cutting action!)
- With Balluffchip bore.
- **Strengthened version.**

Advantage:

30 2312/2314 – **Positive connection between the shrink-fit chuck and tool**
- **prevents the tool being pulled out accidentally - high safety!**
- **prevents jerky radial movement.**

In addition to the advantage of the process reliability, due to the reinforced design the chuck has a
- lower tendency to vibrate, i.e. longer tool life and better surface finishes.
- Higher clamping forces than with standard shrink-fit chucks.

Tools freely selectable! Shank grinding obtainable from Hoffmann, but also freely available!

Application:

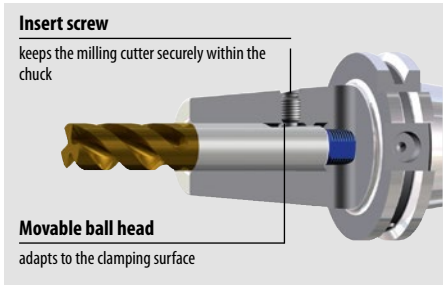
30 2312/2314 – For clamping tools with parallel shank to h6 tolerance. Protection against withdrawal: The tool must have a defined clamping flat. Suitable for inductive, contact and hot-air shrink units.

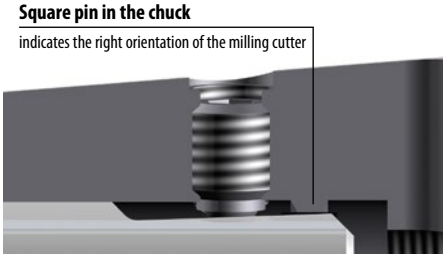
Optional extras:

30 2312/2314 – Pull studs (PS) No. 308600 – 308800, PS pull stud wrenches No. 308810 – 308830, shrink-fitting units, accessories No. 354210 – 354450.

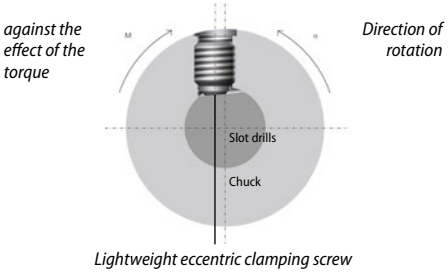
Note:

30 2312/2314 – The milling cutter must must have a defined clamping flat. This clamping flat can be ordered for a new tool or an existing tool. **Number for** clamping flat**: SZ2025 + suitable size.** You can even create the clamping flat yourself, the data is available at: http://ho7.eu/anschliff.





Quick and easy positioning during the shrink process

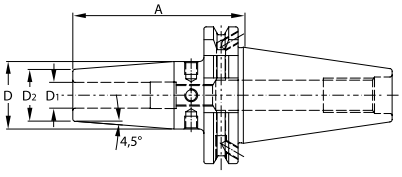


Lightweight eccentric clamping screw prevents the tool rotating.

DIN 69871	ISO 7388-1	Form ADB	G 2.5 25000 min^{-1}	≤3µm	HSC	HPC

Protection against the milling cutter pulling out

30 2312



Clamping ∅ D_1			mm	12	16	20
31A 30 2312	Garant Shrink-fit chucks 4.5° with retainer function	SK 40 A = 80		XXX	XXX	XXX
31A 30 2314		SK 50 A = 80		XXX	XXX	XXX
∅ D			mm	42	42	50
∅ D_2			mm	33	33	44

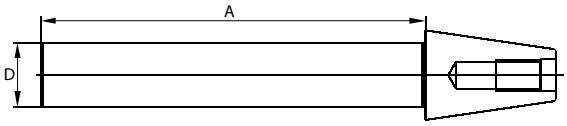
Shank ∅ tool		mm	12	16	20
19T SZ 2025	Shank clamping flats for shrink-fit chucks, with retainer function		(XXX)	(XXX)	(XXX)

DIN 69871 | ISO 7388-1 | ≤3µm

Checking mandrel – DIN 69871

Application: For acceptance of machine tools according to ISO recommendation R230.
Supplied with: Wooden box and test certificate.

30 2396



A dimension		mm	300	∅ D mm
31A 30 2396	Checking mandrel DIN 69871	SK 40	XXX	40
31A 30 2397		SK 50	XXX	50

DIN 69871 | ISO 7388-1 | Form ADB | G 2.5 25000 min^{-1} | ≤3µm | HSC | HPC

Shrink-fit chuck „SP“ 4.5°– DIN 69871

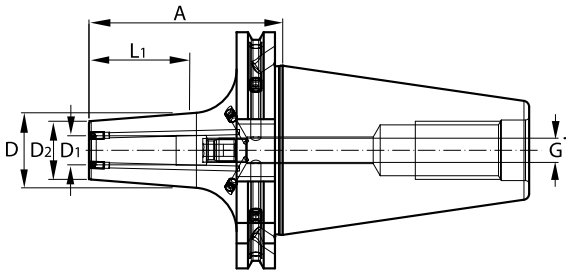
- Supplied with coolant supply holes that can be plugged.
- High-temperature steel.
- Integral tool length adjustment, adjustment track 10 mm.
- For HSS and carbide.
- Shanks hard turned (for smooth running!)
- With Balluffchip bore.
- Glass bead blasted.

Advantage: The reinforced version
- permits better machining results (feed rate, depth of cut).
- achieves better workpiece surface quality (due to vibration damping effect).

Application: For clamping tools with parallel shank to h6 tolerance. Suitable for inductive, contact and hot-air shrink units.

Optional extras: Pull studs (PS) No. 308600 – 308800. PS wrenches No. 308820 – 308835, Shrink-fit chuck extensions No. 302410 – 302419. Shrink-fit units, accessories No. 354210 – 354450.

30 2322



Clamping range ∅ D_1		mm	6	8	10	12	16	20	25	32
31A 30 2316	Shrink-fit chuck with cooling channel bores and **strengthened walls**	SK 40 short	XXX	XXX	XXX	XXX	XXX	XXX	–	–
31A 30 2322		SK 50 short	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
Dimension A (30 2316)		mm	65	65	65	65	65	65	–	–
Dimension A (30 2322)		mm	80	80	80	80	80	80	100	100
∅ D (30 2322)		mm	27.7	27.7	31	31	34.3	40.6	55.9	55.9
∅ D_2 (30 2316)		mm	22	22	26.5	26.5	29.5	35.5	–	–
∅ D_2 (30 2322)		mm	21	21	24	24	27	33	44	44
∅ D_3 (30 2316)		mm	28.4	28.4	32.9	32.9	36.2	42.6	–	–
L_1 (30 2316)		mm	36	36	41	47	50	52	–	–
L_1 (30 2322)		mm	42.5	42.5	44.4	44.4	46.2	48	75.4	75.4

DIN 69871 | ISO 7388-1 | Form ADB | G 2.5 25000 min^{-1} | ≤3µm | HSC | HPC

Shrink-fit chucks 4.5° – DIN 69871

- High-temperature steel.
- Size 3 -5 for carbide, from size 6 for HSS and carbide.
- All shanks hard turned (for smooth running!).
- With Balluffchip bore.

30 2230 – **Ultra-short version** for more stability and less vibration.

30 2227/2230/2237/2252/2257/2259/2267/2287/2292 – With **coolant hole bores** tapped for plugging. Coolant hole bores at clamping ∅ D1: 3, 4 and 5 mm cannot be plugged.

30 2237/2287 – Special nickel plating.

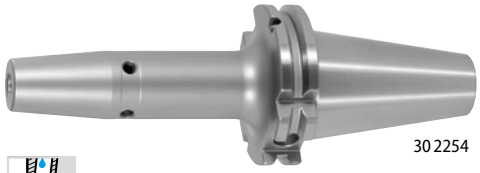
30 2251/2254/2288 – Glass bead blasted.

Application: For clamping tools with parallel shank to h6 tolerance. Suitable for inductive, contact, and hot-air shrink units.

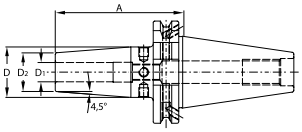
Optional extras: Pull studs (PS) No. 308600 – 308800. PS wrenches No. 308820 – 308835, Shrink-fit chuck extensions No. 302410 – 302419. Shrink-fit units, accessories No. 354210 – 354450.

Note:
30 2230 – No length adjustment available.

30 2252


30 2254

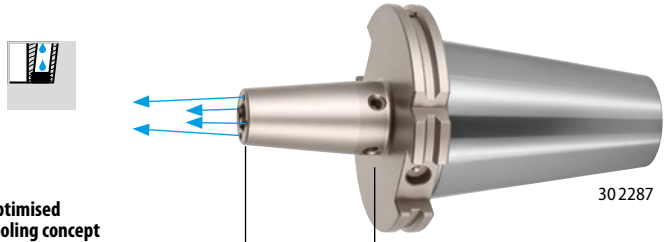
30 2237



Optimised cooling concept
- 4 cooling channel bores instead of 2.
- Different alignment angles of the cooling channel bores.

Corrosion protection
Special surface treatment.

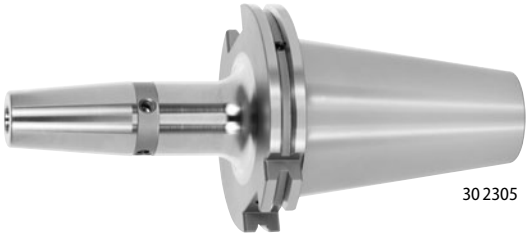
Clamping range ∅ D_1				mm	3	4	5	6	8	10	12	14	16	18	20	25	32
new 31A	30 2227		Shrink-fit chuck **with cooling channel bores**	SK 30 short	–	–	–	XXX	XXX	XXX	XXX	–	XXX	–	XXX	–	–
31A	30 2225	Garant	Shrink-fit chuck	SK 30 short	XXX	XXX	XXX	XXX	XXX	XXX	XXX	(XXX)	(XXX)	(XXX)	(XXX)	–	–
31A	30 2230		SK shrink-fit chuck **with cooling channel bores**	SK 40 ultra short	–	–	–	–	–	XXX	XXX	–	XXX	–	XXX	XXX	–
31A	30 2235		SK shrink-fit chuck	SK 40 short	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	–
33W	30 2251	WTE		SK 40 short	XXX	XXX	(XXX)	XXX	XXX	XXX	XXX	XXX	XXX	(XXX)	(XXX)	(XXX)	XXX
31A	30 2237	Garant	Shrink-fit chuck **with 4 cooling channel bores, nickel-plated**	SK 40 short	–	–	–	XXX	XXX	XXX	XXX	–	XXX	–	XXX	–	–
31A	30 2252		SK shrink-fit chuck **with cooling channel bores**	SK 40 short	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	–
33W	30 2254	WTE	SK shrink-fit chuck	SK 40 A = 120	(XXX)	(XXX)	(XXX)	XXX	XXX	XXX	XXX	(XXX)	XXX	(XXX)	(XXX)	(XXX)	(XXX)
31A	30 2256			SK 40 A = 120	–	–	–	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	–
31A	30 2257		SK shrink-fit chuck **with cooling channel bores**	SK 40 A = 120	–	–	–	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	–	–
31A	30 2266		SK shrink-fit chuck	SK 40 A = 130	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
31A	30 2267	Garant	SK shrink-fit chuck **with cooling channel bores**	SK 40 A = 130	XXX	XXX	XXX	XXX	XXX	XXX	XXX	–	XXX	–	XXX	–	–
31A	30 2258		SK shrink-fit chuck	SK 40 A = 160	–	–	–	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	–
31A	30 2278			SK 40 A = 200	–	–	–	XXX	XXX	XXX	XXX	–	(XXX)	–	XXX	XXX	–
31A	30 2259		Shrink-fit chuck **with cooling channel bores**	SK 40 A = 160	–	–	–	XXX	XXX	XXX	XXX	–	XXX	–	XXX	–	–
Dimension A (30 2227, 30 2225, 30 2235, 30 2251, 30 2237, 30 2252)				mm	80	80	80	80	80	80	80	80	80	80	80	100	100
Dimension A (30 2230)				mm	–	–	–	–	–	65	65	–	65	–	65	75	–
∅ D (30 2227, 30 2225, 30 2251, 30 2256, 30 2258, 30 2278, 30 2259)				mm	17	22	22	27	27	32	32	34	34	42	42	53	53
∅ D (30 2230)				mm	–	–	–	–	–	33	33	–	37	–	43	50	–
∅ D (30 2235, 30 2237, 30 2252)				mm	17	17	17	27	27	31.4	31.4	34	34	41	41	53	–
∅ D (30 2254)				mm	20	22	22	27	27	32	32	34	34	42	42	53	53
∅ D (30 2257)				mm	–	–	–	26.7	26.7	30.5	31.4	34	34	40.9	41.2	–	–
∅ D (30 2266, 30 2267)				mm	17	17	17	27	27	32	32	34	34	42	42	53	53
∅ D_2 (30 2227, 30 2225, 30 2251, 30 2237, 30 2254, 30 2256, 30 2257, 30 2258, 30 2278, 30 2259)				mm	10	15	15	21	21	24	24	27	27	33	33	44	44
∅ D_2 (30 2230)				mm	–	–	–	–	–	26	26	–	29	–	35	45	–
∅ D_2 (30 2235, 30 2252, 30 2266, 30 2267)				mm	12	12	12	21	21	24	24	27	27	33	33	44	44



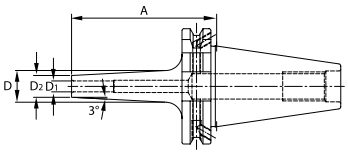
Optimised cooling concept
4 cooling channel bores with different alignment angles.

30 2287

Corrosion protection
Special surface treatment.



30 2305



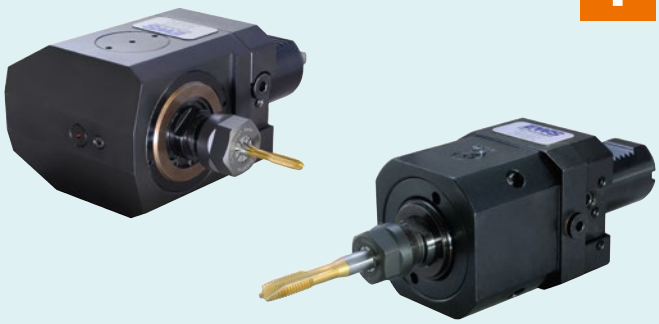
Clamping range ∅ D_1				mm	6	8	10	12	14	16	18	20	25	32
31A	30 2285		SK shrink-fit chuck	SK 50 short	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
31A	30 2287	Garant	Shrink-fit chuck **with 4 cooling channel bores, nickel-plated**	SK 50 short	XXX	XXX	XXX	XXX	–	XXX	–	XXX	–	–
33W	30 2288	WTE	SK shrink-fit chuck	SK 50 short	XXX	XXX	XXX	XXX	(XXX)	(XXX)	(XXX)	XXX	(XXX)	(XXX)
31A	30 2292		SK shrink-fit chuck **with cooling channel bores**	SK 50 short	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
31A	30 2305	Garant	SK shrink-fit chuck	SK 50 A = 120	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
31A	30 2310			SK 50 A = 160	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
31A	30 2355			SK 50 A = 200	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
Dimension A (30 2285, 30 2287, 30 2288, 30 2292)				mm	80	80	80	80	80	80	80	80	100	100
∅ D (30 2285, 30 2287, 30 2292, 30 2305, 30 2310, 30 2355)				mm	27	27	31.4	31.4	34	34	41	41	53	53
∅ D (30 2288)				mm	27	27	32	32	34	34	42	42	53	53
∅ D_2				mm	21	21	24	24	27	27	33	33	44	44

EWS TAPMATIC – high-speed tapping with reversing kinematics

Characteristics
- Automatic reversal of direction of rotation
- Length compensation in tension
- Constant cutting speed

Advantages
- Reduces the machining time by up to 50 %
- Increases the production capacity
- Increases the working life of the tap 3-fold
- Protects the machine (avoiding spindle changeover)
- Saves around 75 % power consumption of the machine due to elimination of braking and starting up

Availability
- **RSR radial tapping heads**
  Tapping range M4.5 – M12
  Speed 2500 rpm (i = 1.5: 1)
- **ASR axial tapping heads**



Tapping range M4.5 – M12
Speed 2500 rpm (i = 1: 1)

Garant VG1 pre-setting device

Pre-setting device VG1
(No. 35 4760)

Functional storage plates

Base body with granite cover

Tidy pipe routing

DIN 69871 | ISO 7388-1 | Form ADB | G 2.5 25000 min^{-1} | ≤3µm | HSC | HPC

Garant Shrink-fit chucks (extra slim design) 4.5° – DIN 69871

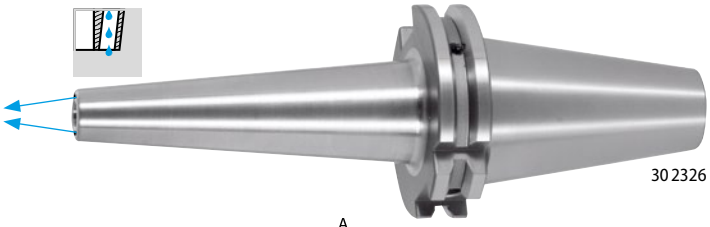
- All shanks hard turned (for smooth running!).
- With Balluffchip bore.
- Integral tool length adjustment, range 10 mm available only **from size 6 upwards!**
- **Extra slim design(reduced interference contour).**

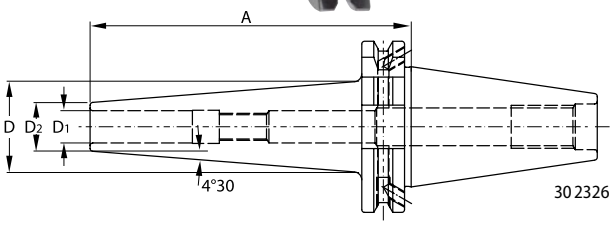
30 2326/2336/2343 – ■ With cooling channel bores.

Application:
- Cutting operations in tool and mould making.
- For clamping tools with parallel shank to h6 tolerance.

Optional extras: Pull studs (PS) No. 308600 – 308806. PS wrenches No. 308820 – 308835, Shrink-fit chuck extensions No. 302410 – 302419. Shrink-fitting units No. 354210 – 354450.

30 2325


30 2326



30 2326

Clamping range ∅ D_1		mm	3	4	5	6	8	10	12
31A 30 2326	SK shrink-fit chucks **slim, with cooling channel bore**	**SK 40 A = 120**	–	–	–	XXX	XXX	XXX	XXX
31A 30 2325	SK shrink-fit chucks **slim**	**SK 40 A = 120**	XXX	XXX	XXX	XXX	XXX	XXX	XXX
31A 30 2333		**SK 40 A = 160**	XXX	XXX	XXX	XXX	XXX	XXX	XXX
new 31A 30 2336	SK shrink-fit chucks **slim, with cooling channel bore**	**SK 40 A = 160**	–	–	–	XXX	XXX	XXX	XXX
new 31A 30 2343		**SK 50 A = 120**	–	–	–	XXX	XXX	XXX	XXX
31A 30 2342	SK shrink-fit chucks **slim**	**SK 50 A = 120**	XXX	XXX	XXX	XXX	XXX	XXX	XXX
31A 30 2344		**SK 50 A = 160**	XXX	XXX	XXX	XXX	XXX	XXX	XXX
∅ D (30 2326)		mm	–	–	–	30.9	31.9	33.9	35.9
∅ D (30 2325, 30 2333, 30 2336, 30 2343, 30 2342, 30 2344)		mm	25	25	25	30.9	30.9	33.9	33.9
∅ D_2 (30 2326)		mm	–	–	–	15	16	18	20
∅ D_2 (30 2325, 30 2333, 30 2336, 30 2343, 30 2342, 30 2344)		mm	9	9	9	15	15	18	18

DIN 69871 | ISO 7388-1 | Form ADB | G 2.5 25000 min^{-1} | ≤3µm | HSC

Garant Shrink-fit chucks 3° (for tool and mould making) – DIN 69871

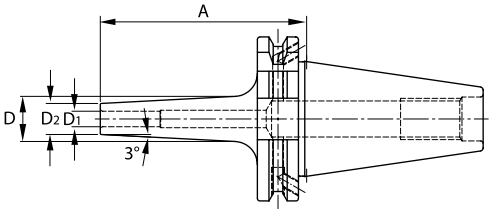
- All shanks hard turned (for smooth running!).
- With Balluffchip bore.
- **Extra slim design (3° contour).**

Application:
- **Especially for tool and mould making.**
- Wherever reduced interference contours are required.
- For clamping tools with shank tolerance h6.

Optional extras: Pull studs (PS) No. 308600 – 308806. PS wrenches No. 308820 – 308835. Shrink-fit chuck extensions No. 302410 size 12/3 and 12/4. Shrink-fitting units No. 354210 – 304450.

Note: No length adjustment available!

30 2352



Clamping range ∅ D_1		mm	3	4	5	6	8	10	12
31A 30 2352	SK shrink-fit chucks **3°**	**SK 40 A = 80**	XXX	XXX	XXX	XXX	XXX	XXX	XXX
31A 30 2356		**SK 40 A = 120**	XXX	XXX	XXX	XXX	XXX	XXX	XXX
∅ D		mm	16	17	18	19	21	23	25
∅ D_2		mm	9	10	11	12	14	16	18

Garant Shrink-fit chuck extensions 4.5°

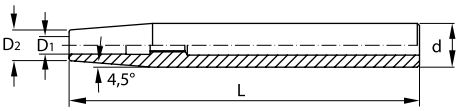
Bored through for internal coolant supply (IC).

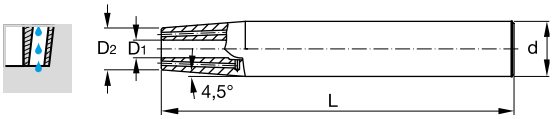
30 2410 – **Without** length adjustment screw, **short.**
30 2412 – **With** length adjustment screw, **short.**
30 2414 – **Without** length adjustment screw, **short** and **with cooling channel bores** (cannot be plugged).
30 2416 – **Without** length adjustment screw, **long.**

Application: For use in shrink-fit chucks, hydraulic chucks, and ER collet chucks.

Note: Maximum permissible speed 8,000 rpm.

30 2410





30 2414

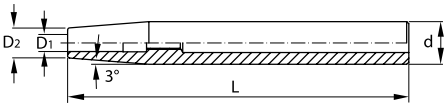
∅ d / ∅ D_1	31A 30 2410	31A 30 2412	31A 30 2414	31A 30 2416	∅ D_2
	Shrink-fit chuck extension 4.5°				
	without length adjustment screw	with length adjustment screw	without length adjustment screw, with through coolant holes	without length adjustment screw	
mm	L = 160 mm	L = 160 mm	L = 160 mm	L = 300 mm	mm
12/3	XXX	–	–	–	8
12/4	XXX	–	–	–	8
16/3	XXX	–	–	–	10
16/4	XXX	–	–	–	10
16/5	XXX	–	–	–	10
16/6	XXX	XXX	–	–	10
20/5	(XXX)	–	–	–	14
20/6	XXX	XXX	XXX	XXX	14
20/8	XXX	XXX	–	XXX	14
25/8	(XXX)	XXX	(XXX)	XXX	19
25/10	XXX	XXX	XXX	XXX	20
25/12	XXX	XXX	–	XXX	20
25/14	XXX	XXX	–	XXX	20
25/16	XXX	XXX	–	XXX	22
32/10	(XXX)	(XXX)	(XXX)	XXX	24
32/12	(XXX)	(XXX)	(XXX)	XXX	24
32/14	(XXX)	(XXX)	(XXX)	(XXX)	27
32/16	XXX	XXX	(XXX)	XXX	27
32/18	(XXX)	XXX	–	–	27
32/20	XXX	XXX	–	XXX	27

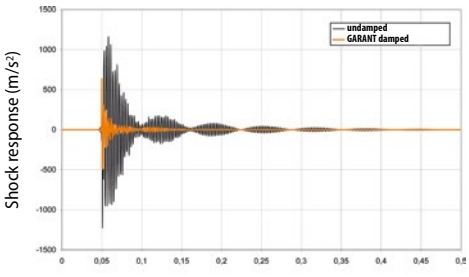
≤80 bar

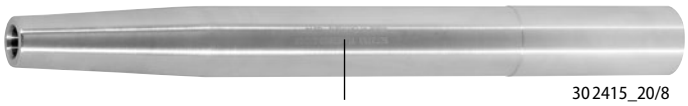
Garant Vibration-damped shrink-fit chuck – adapter 3°

Shank bored through for internal coolant supply (ICS) up to maximum 80 bar. Including length adjustment backstop screw. A **carbide core embedded** in the adapter damps the tendency to vibrate. Maximum permissible speed 8,000 rpm.

Advantage:
- Avoid vibrations in the clamping system.
- Better workpiece surface finishes.
- Increased tool service lives.







30 2415_20/8

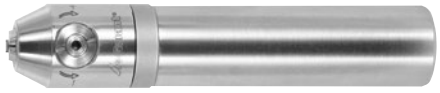
Carbide core embedded in polymer.

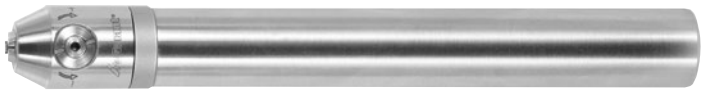
∅ d / ∅ D_1		mm	20/6	20/8	20/10	20/12	25/10	25/12	25/14	25/16
31P 30 2415	Shrink adapter 3°, vibration damped	L = 210 mm	XXX	XXX	XXX	XXX	–	–	–	–
31P 30 2417		L = 300 mm	–	–	–	–	XXX	XXX	XXX	XXX
∅ D_2		mm	12	14	16	18	16	18	20	22

G 2.5
18000 min^{-1}
HSC

Garant MicroClamp drill chuck

30 2406


30 2407

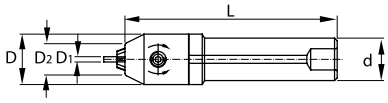

30 2408

- For clockwise and anticlockwise rotation.
- Concentricity ≤ 0.005 mm.
- Transmissible torque 7 Nm.
- Maximum speed 60,000 rpm.
- Operated from the side.
- Permissible tightening torque 2 Nm.

30 2407 Size 0,2-3 – ■ **Clamping range 0.2 – 3.4 mm.**
Size 0,2-6 – ■ **Clamping range 0.2 – 6.4 mm.**
30 2406/2408 – ■ **Clamping range 0.2 – 3.4 mm.**

Supplied with: Clamping wrench with T-handle.

Type		0,2-3	0,2-6
31H 30 2406	MicroClamp **plain, L = 80**	XXX	–
31H 30 2407	MicroClamp **plain, L = 100**	XXX	XXX
31H 30 2408	MicroClamp **plain, L = 160**	XXX	–
Shank tolerance		h6	
∅ d	mm	16	20
∅ D_1	mm	0.2 – 3.4	0.2 – 6.4
∅ D	mm	19	25
∅ D_2	mm	12	16
Spare chuck key		627425_2	



DIN 6359
DIN 2080
≤3µm

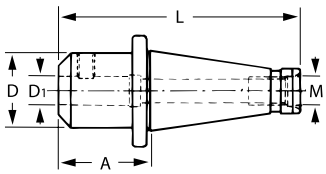
Side lock arbors (Weldon) – DIN 2080

Internal thread for manual clamping.

Application: For clamping tools with side flat to DIN 1835 B and DIN 6535 HB.

30 2425

Clamping range ∅ D_1		mm	6	8	10	12	16	20
36E 30 2420	EROGLU Side lock arbor	SK 40	XXX	XXX	XXX	XXX	XXX	XXX
32A 30 2425	HOLEX Side lock arbor	SK 40	XXX	XXX	XXX	XXX	XXX	XXX
Dimension A		mm	50	50	50	50	63	63
∅ D		mm	25	28	35	42	48	52
L		mm	143	143	143	143	156	156
M			M16					
Spare clamping screw 309900			6	8	10	12	16	20



Clamping range ∅ D_1		mm	6	8	10	12	16	20	25	32
36E 30 2440	EROGLU Side lock arbor	SK 50	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
32A 30 2435	HOLEX Side lock arbor	SK 50	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
Dimension A		mm	63	63	63	63	63	63	80	80
∅ D		mm	25	28	35	42	48	52	65	72
L		mm	190	190	190	190	190	190	207	207
M			M24							
Spare clamping screw 309900			6	8	10	12	16	20	25	32

DIN 2080
Form A
≤14 Nm

Short drill chucks – DIN 2080

For clockwise and anticlockwise rotation. Internal thread for manual clamping.

Application: For clamping drills, countersinks, and reamers on milling machines.

Supplied with:

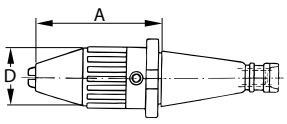
30 2540 – Hexagon screwdriver with T-handle.
30 2565/2575 – Supplied with Torx® chuck key with T-handle, for optimum clamping force.

30 2540

G 6.3
15000 min^{-1}
≤50µm

30 2565

Clamping range		mm	1-13	2,5-16
37D 30 2540		SK 40	XXX	XXX
32K 30 2565	HOLEX Short drill chuck **Form A**	SK 40	–	XXX
32K 30 2575	HOLEX Short drill chuck **Form A**	SK 50	–	XXX
Dimension A (30 2540)		mm	80	97
Dimension A (30 2565, 30 2575)		mm	–	85
∅ D		mm	43	56
Spare hexagon screwdriver 627425 (30 2540)			SW6	



DIN 2080 ≤3µm

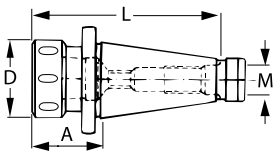
Collet chucks – DIN 2080

OZ collet chuck

Ball-bearing power-clamping nut.

Application: For clamping tools with plain shank in OZ collets to ISO 10897.

Optional extras: OZ collets No. 309540 – 309560, Set No. 309562 (type 462 E) for size 2 – 25, C wrench No. 628400.

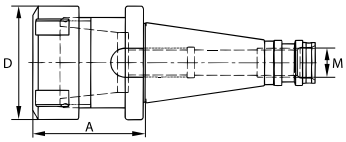


Clamping range			mm	2-25	4-32
36E 30 2460	EROGLU	OZ collet chuck	SK 40	XXX	–
32A 30 2475	HOLEX		SK 40	XXX	–
36E 30 2462	EROGLU		SK 50	–	XXX
32A 30 2477	HOLEX		SK 50	–	XXX
Dimension A (30 2460, 30 2462)			mm	66	73
Dimension A (30 2475, 30 2477)			mm	70	80
∅ D			mm	60	72
L (30 2460, 30 2462)			mm	159	200
L (30 2475, 30 2477)			mm	163	207
M				M16	M24
Spare clamping nut 309670				2 – 25	4 – 32
suitable hook spanner 628400				58/62	68/75

ER collet chuck

Application: For clamping tools with plain shank in ER / ESX collets to ISO 15488-B.

Optional extras: ER collets No. 308981 – 309040, ER sets No. 309024 – 309320, ER clamping wrenches No. 309680 – 309740.



for ER collets			ER	25	32	40
36E 30 2465	EROGLU	ER collet chuck	SK 40	–	XXX	XXX
32A 30 2485	HOLEX		SK 40	XXX	XXX	XXX
Clamping range			mm	1 – 16	2 – 20	4 – 26
Dimension A (30 2465)			mm	–	50	80
Dimension A (30 2485)			mm	50	60	80
∅ D			mm	42	50	63
M					M16	
Spare ER clamping nut				25	32	40

DIN 6358 DIN 2080 ≤6µm

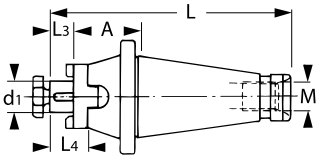
Face mill adapters – DIN 2080

Internal thread for manual clamping.

Application: **With drive key** for milling cutters **with longitudinal groove,** e.g. DIN 841.
With face mill drive ring for milling cutters with **transverse slots,**DIN 1880.

Supplied with: Drive key, face mill drive ring, and lock screw.

Optional extras: Special toggle spanner No. 309840.



Spigot ∅ d_1			mm	16	22	27	32	40
36E 30 2500	EROGLU	Combination face mill adapter	SK 40 A = 52	XXX	XXX	XXX	XXX	XXX
32A 30 2505	HOLEX		SK 40 A = 52	XXX	XXX	XXX	XXX	XXX
36E 30 2520	EROGLU		SK 50 A = 55	XXX	XXX	XXX	XXX	XXX
32A 30 2515	HOLEX		SK 50 A = 55	XXX	XXX	XXX	XXX	XXX
L (30 2500, 30 2505)			mm	162	164	166	169	172
L (30 2520, 30 2515)			mm	199	201	203	206	209
L_3			mm	17	19	21	24	27
L_4			mm	27	31	33	38	41
M (30 2500, 30 2505)						M16		
M (30 2520, 30 2515)						M24		
Spare milling cutter lock screw 309860				16	22	27	32	40
Spare face mill drive ring 309870				16	22	27	32	40
suitable special toggle spanner 309840				16	22	27	32	40

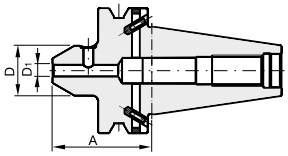
DIN 6359 | ISO 7388-2 | JIS B6339 | ≤3µm | HPC

Side lock arbors Weldon – JIS B 6339 (MAS-BT)

30 2593/2596/2606/2650/2655 – All shanks hard turned (for smooth running). Balancing quality G2.5 / 25,000 rpm. **With coolant supply holes that can be plugged.**
30 2595/2600/2605/2610/2615/2660/2665/2670 – All shanks burnished. Balancing quality G6.3 / 15,000 rpm.
30 2597/2607/2617/2657/2667 – All shanks fine bead blasted. Balancing quality G6.3 / 18,000 rpm.
30 2605/2615/2665 –Coolant channel bore can be plugged with an O-ring.
Application: For clamping tools with side flats to DIN 1835 B and DIN 6535 HB.
Optional extras: Pull studs (PS) No. 308760 – 308806. Pull stud wrenches No. 308820; 308835.

Side lock arbors, Weldon

30 2596



30 2600

30 2607

Clamping ∅ D_1			mm	6	8	10	12	14	16	18	20	25	32
31A 30 2593	Garant	Side lock arbor **Form AD with cooling channel bores**	**BT 30 short**	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	–	–
32A 30 2597	HOLEX	Side lock arbors **Form AD**	**BT 30 short**	XXX	XXX	XXX	XXX	–	XXX	–	XXX	–	–
36E 30 2595	EROGLU		**BT 30 short**	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	–	–
31A 30 2596	Garant	Side lock arbor **Form ADB with cooling channel bores**	**BT 40 short**	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
32A 30 2607	HOLEX	Side lock arbor **Form AD**	**BT 40 short**	XXX	XXX	XXX	XXX	–	XXX	–	XXX	XXX	XXX
36E 30 2600	EROGLU	Side lock arbor **Form ADB**	**BT 40 short**	XXX	XXX	XXX	XXX	XXX	XXX	–	XXX	XXX	–
36E 30 2605		Side lock arbor **Form ADB with cooling channel**	**BT 40 short**	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
31A 30 2606	Garant	Side lock arbor **Form ADB with cooling channel bores**	**BT 40 A = 100**	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	–	–
32A 30 2617	HOLEX	Side lock arbor **Form AD**	**BT 40 A = 100**	XXX	XXX	XXX	XXX	–	XXX	–	XXX	–	–
36E 30 2610	EROGLU	Side lock arbor **Form ADB**	**BT 40 A = 100**	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	–	–
36E 30 2615		Side lock arbor **Form ADB with cooling channel**	**BT 40 A = 100**	(XXX)	(XXX)	(XXX)	(XXX)	(XXX)	(XXX)	(XXX)	(XXX)	–	–
31A 30 2650	Garant	Side lock arbor **Form ADB with cooling channel bores**	**BT 50 short**	XXX	XXX	XXX	XXX	–	XXX	–	XXX	XXX	XXX
32A 30 2657	HOLEX	Side lock arbor **Form AD**	**BT 50 short**	XXX	XXX	XXX	XXX	–	XXX	–	XXX	XXX	XXX
36E 30 2660	EROGLU	Side lock arbor **Form ADB**	**BT 50 short**	(XXX)	(XXX)	(XXX)	XXX	(XXX)	XXX	–	XXX	XXX	XXX
36E 30 2665		Side lock arbor **Form ADB with cooling channel**	**BT 50 short**	(XXX)	(XXX)	XXX	XXX	(XXX)	XXX	(XXX)	XXX	XXX	XXX
31A 30 2655	Garant	Side lock arbors **Form ADB with cooling channel bores**	**BT 50 A = 100**	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	–	–
32A 30 2667	HOLEX	Side lock arbor **Form AD**	**BT 50 A = 100**	XXX	XXX	XXX	XXX	–	XXX	–	XXX	–	–
36E 30 2670	EROGLU	Side lock arbor **Form ADB**	**BT 50 A = 160**	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
Dimension A (30 2593, 30 2597)			mm	50	50	50	55	55	63	63	70	–	–
Dimension A (30 2595)			mm	50	50	50	50	50	63	63	63	–	–
Dimension A (30 2596, 30 2607, 30 2600, 30 2605)			mm	50	50	63	63	63	63	63	63	90	100
Dimension A (30 2650, 30 2657)			mm	63	63	70	80	–	80	–	80	100	105
Dimension A (30 2660, 30 2665)			mm	63	63	63	80	80	80	80	80	100	105
∅ D			mm	25	28	35	42	44	48	50	52	65	72
Spare clamping screw 309900				6	8	10	12	12	16	16	20	25	32

new

new

DIN 6359 | ISO 7388-2 | JIS B6339 | Form ADB | G 2.5 25000 min^{-1} | ≤3µm | HPC

Garant Weldon side lock arbor with carbide bushing JIS B6339 (MAS-BT)

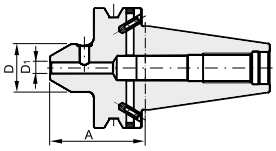
30 2676

Weldon arbors with precision carbide bush in the clamping bore. All shanks hard turned (for smooth running!). With coolant supply holes that can be plugged.

Advantage:
- Increased stability of the arbor – no wear in the clamping bore.
- Radial run-out consistency for repetition accuracy.
- Quiet homogeneous machining noise.
- Increase tool life.

Application: For clamping tools with side flats to DIN 1835 B and DIN 6535 HB.

Optional extras: Pull studs (PS) No. 308760 – 308806, PS wrenches No. 308820 – 308835.



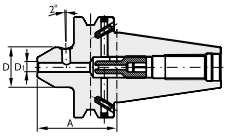
Clamping range ∅ D_1		mm	10	12	16	20
31P 30 2676	Side lock arbors with carbide socket and coolant duct holes	BT 40 short	XXX	XXX	XXX	XXX
31P 30 2686		BT 50 short	XXX	XXX	XXX	XXX
Dimension A (30 2676)		mm	63			
Dimension A (30 2686)		mm	70	80	80	80
∅ D		mm	35	42	48	52
Spare clamping screw 309900			10	12	16	20

DIN 6359 | JIS B6339 | ISO 7388-2 | Form ADB | G 6.3 15000 min^{-1} | ≤3µm | HPC

EROGLU Side lock arbors Whistle Notch – JIS B6339 (MAS-BT)

With clamping screw and stop screw.

Optional extras: Pull studs (PS) No. 308760 – 308806. Pull studs (PS) No. 308760 – 308806, PS pull stud wrenches No. 308820 – 308835.



30 2720

Clamping range ∅ D_1		mm	6	8	10	12	14	16	18	20	25	32
36E 30 2720	Whistle Notch side lock arbor **Form ADB**	BT 40 short	(XXX)	(XXX)	(XXX)	(XXX)	(XXX)	(XXX)	(XXX)	(XXX)	(XXX)	(XXX)
Dimension A		mm	50	50	63	63	63	63	63	63	90	100
∅ D		mm	25	28	35	42	44	48	50	52	65	72
Spare clamping screw 309900			6	8	10	12	12	16	16	20	25	32

ISO 7388-2 | JIS B6339 | Form AD | G 2.5 25000 min^{-1} | ≤3µm | HSC

Garant ER collet chuck, ultra-short – JIS B6339 (MAS-BT)

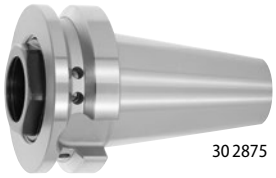
Taper ground internally and externally. **Ultra-short type with internal precision clamping nut.** Best suited to working in restricted working areas, with higher stability.

Application: For clamping tools with parallel shank in collets to DIN 6499 – Form A and B.

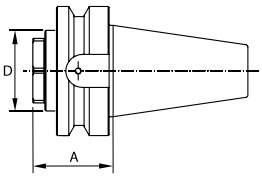
Supplied with: ER clamping nut (internal).

Optional extras: ER collets No. 308881 – 309434, pull studs (PS) No. 308760 – 308806, PS wrenches No. 308820 – 308835.

Note: Matching clamping nut No. 309621.


30 2875

for ER collets		ER	25	32
31A 30 2875	ER collet chuck, ultra-short	BT 40	XXX	XXX
31A 30 2876		BT 50	–	XXX
Dimension A (30 2875)		mm	33	38
Dimension A (30 2876)		mm	–	40
∅ D		mm	27	40



ISO 7388-2 | JIS B6339 | Form ADB | G 6.3 15000 min^{-1} | ≤3µm | HSC

EROGLU OZ collet chuck – JIS B6339 (MAS-BT)

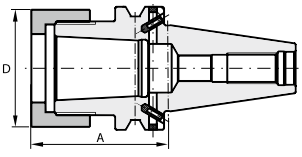
Application: For clamping tools with plain shank in collets to **ISO 10897.**

Supplied with: OZ clamping nut.

Optional extras: Pull studs (PS) No. 308760 – 308806, PS wrench No. 308820; 308835, OZ collets No. 309540 – 309565, Hook spanner No. 628400.

30 2880

Clamping range		mm	2-16	2-25
36E 30 2880	OZ collet chuck **Form ADB**	BT 40 A = 70	(XXX)	(XXX)
Dimension A		mm	70	
∅ D		mm	43	60
Spare clamping nut 309670			2 – 16	2 – 25
suitable hook spanner 628400			40/42	58/62



ISO 7388-2 | JIS B6339 | ≤3µm | HSC

ER collet chuck – JIS B6339 (MAS-BT)

External and internal taper ground.

30 2745/2755/2765/2818/2828 – ■ All shanks hard turned (for smooth running!). Balancing quality G2.5/25,000 rpm.
- ■ Clamping nut balanced for HSM (G2.5/25,000 rpm).
- ■ Optimum wear characteristics and torque transmission due to the coated precision clamping nut.

30 2747/2757/2767/2817/2827 – ■ All shanks fine bead blasted. Balancing quality G6.3 / 18,000 rpm.
- ■ High-quality precision clamping nut.

30 2750/2760/2780/2800/2820/2825/2830 – All shanks burnished. Balancing quality G6.3 / 20,000 rpm.

Application: For clamping tools with parallel shank in collets to **DIN 6499 Form A and B.**

Supplied with: ER clamping nut.

Optional extras: ER collets No. 308881 – 309434, ER chuck key No. 309680 – 309720. Pull studs (PS) No. 308760 – 308806. Pull stud wrenches No. 308820; 308835.

Note:	Matching clamping nut No. 309580 or 309610.

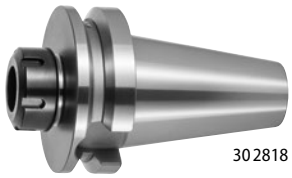
G 2.5 25000 min^{-1} | Form AD

30 2745

G 2.5 25000 min^{-1} | Form ADB

30 2755

G 2.5 25000 min^{-1} | Form ADB



30 2818

for ER collets			ER	16	20	25	32	40
31A 30 2745	Garant	ER collet chuck Form AD	BT 30 A = 60	XXX	XXX	XXX	XXX	–
32A 30 2747	HOLEX		BT 30 A = 60	XXX	XXX	XXX	–	–
36E 30 2750	EROGLU		BT 30 A = 70	XXX	–	XXX	XXX	XXX
31A 30 2755	Garant	ER collet chuck Form ADB	BT 40 short	XXX	XXX	XXX	XXX	XXX
32A 30 2757	HOLEX	ER collet chuck Form AD	BT 40 short	XXX	–	XXX	XXX	XXX
36E 30 2760	EROGLU	ER collet chuck Form ADB	BT 40 A = short	XXX	–	XXX	XXX	XXX
31A 30 2765	Garant		BT 40 A = 100	XXX	XXX	XXX	XXX	XXX
new 32A 30 2767	HOLEX	ER collet chuck Form AD	BT 40 A = 100	XXX	–	XXX	XXX	XXX
36E 30 2780	EROGLU	ER collet chuck Form ADB	BT 40 A = 100	XXX	–	XXX	XXX	XXX
36E 30 2800			BT 40 A = 160	XXX	–	XXX	XXX	XXX
31A 30 2818	Garant		BT 50 short	XXX	XXX	XXX	XXX	XXX
32A 30 2817	HOLEX	ER collet chuck Form AD	BT 50 short	XXX	–	XXX	XXX	XXX
36E 30 2820	EROGLU	ER collet chuck Form ADB	BT 50 short	(XXX)	–	XXX	XXX	XXX
31A 30 2828	Garant		BT 50 A = 100	XXX	XXX	XXX	XXX	XXX
32A 30 2827	HOLEX	ER collet chuck Form AD	BT 50 A = 100	XXX	–	XXX	XXX	XXX
36E 30 2825	EROGLU	ER collet chuck Form ADB	BT 50 A = 100	XXX	–	XXX	XXX	XXX
36E 30 2830			BT 50 A = 160	(XXX)	–	(XXX)	(XXX)	(XXX)
Clamping range			mm	0.5 – 10	1 – 13	1 – 16	2 – 20	3 – 26
Dimension A (30 2755, 30 2757, 30 2820)			mm	70	70	70	70	80
Dimension A (30 2760)			mm	63	–	60	70	80
Dimension A (30 2818, 30 2817)			mm			80		
∅ D			mm	28	34	42	50	63
Spare ER clamping nut (30 9580)				16	20	25	32	40
ER chuck key (30 9680)				16	20	25	32	40

G 6,3 18000 min^{-1} | Form AD

30 2757

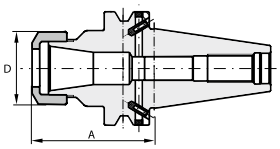
G 6.3 20000 min^{-1} | Form ADB

30 2760

G 6.3 20000 min^{-1} | Form ADB

30 2800

new



ISO 7388-2 | JIS B6339 | Form ADB | G 2.5 25000 min^{-1} | ≤3µm | HPC | HSC

Garant HiRunER Precision ER collet chuck – JIS B6339 (MAS-BT)

External and internal tapers are ground. All shanks are hard turned for a smooth cutting action. Including Balluffchip bore, high-performance clamping nut (up to 25000 rpm).

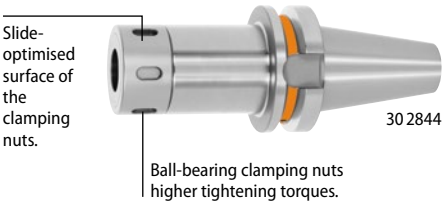
Advantage:
- **Excellent concentricity in the system** (chuck + collet + clamping nut), 3µm radial run-out with a 2µm collet, 6µm radial run-out with a 5µm collet.
- **Extremely strong holding force** (up to **factor 2** better than the standard ER chuck).
- **Vibration reduction effect** due to 2-part clamping nut.

Application: For clamping tools with plain shank in collets to DIN 6499 – Form A and B.

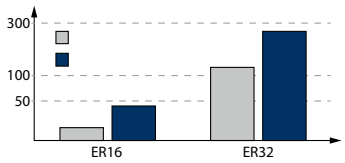
Supplied with: **Precision clamping nut**.

Optional extras: Pull studs (PS) No. 308760 – 308806,
PS wrenches No. 308820 – 308835,
ER collets No. 308881 – 309434,
Fahrion ER collets 308901 - 309434,
ER clamping wrenches No. 309748 – 309749.

Note:
- Clamps only nominal ∅ up to shank ∅ tolerance h 10.
- Do not use the clamping nut in combination with a sealing washer.
- Use it in only combination with Fahrion collets.



Mini – size 11M/ 16M (extremely slim design).



for ER collets		ER	11M (new)	16M (new)	16	25	32	40
31A 30 2839	HiRunER precision ER collet chuck	BT 30 A = 60	XXX	XXX	XXX	XXX	–	–
31A 30 2843		BT 40 A = 70	–	–	XXX	XXX	XXX	XXX
31A 30 2844		BT 40 A = 100	XXX	XXX	XXX	XXX	XXX	XXX
Clamping range		mm	1 – 7	1 – 10	0.5 – 10	1 – 16	2 – 20	3 – 26
∅ D		mm	16	24	34	44	52	62
Spare ER clamping nut			309618 11M	309618 16M	–	–	–	–
Spare ER clamping nut 309617			–	–	16	25	32	40

HiRunER -> the full surface of the collet is seated in the chuck -> higher retention forces! -> better concentricity.

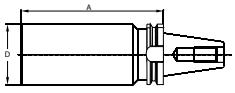
Standard ER chuck -> Collets are not inserted 100 % into the chuck.

ISO 7388-2 | JIS B6339 | Form A

Holex Boring bar blanks for making special tools – JIS B6339 (MAS-BT)

Taper with collar, hardened and ground. Soft shank for further machining.

Optional extras: Pull studs (PS) No. 308760 – 308806.



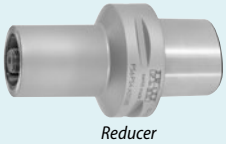
Dimension A		mm	250	315
32A 30 2889	Boring bar blank Form A	BT 40	XXX	–
32A 30 2891		BT 50	–	XXX
∅ D		mm	63	97

Pure flexibility

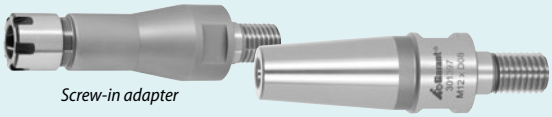
If you're looking for adapters, extensions and problem solvers:

Face mill arbor extension

Adapter milling head / ER collet



Reducer



Screw-in adapter

Hydraulic chuck extension

..and much more.

ISO 7388-2 | JIS B6339 | G 2.5 25000 min⁻¹ | ≤6µm ER+CP | ≤3µm HP+CP | HSC

FAHRION® PRÄZISION

Precision ER collet chucks CENTRO P (CP) – JIS B6339 (MAS-BT)

Please order clamping nuts separately

- Taper ground internally and externally.
- **Radial run-out and repetition accuracy 3µm** at 3 × D, maximum 50 mm.
- **Very high clamping forces** due to the collet fully seated in the chuck and coated clamping nut.
- **Vibration damping** due to the element collet and mass of the chuck.
- **Alternatively without seals,** with ER clamping nut CP No. 309655 **or sealed system** with ER clamping nut CP for HP sealing rings No. 309665 in conjunction with HP sealing rings No. 309666 – 309668 (for internal coolant supply or as a dirt trap!).

Advantage: Patented optimum seating of the collet, double guides, trapezoidal thread and low-friction coated clamping nut amalgamate when clamped into a sturdy unit, thus ensuring a very high degree of rigidity and precision.

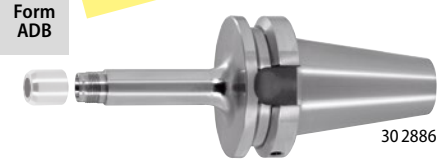
Application: For high precision clamping of tools with plain shanks.

Supplied with: **Without clamping nut**, without sealing rings.

Optional extras: Pull-studs (PS) No. 308760 – 308806, PS wrenches No. 308820 – 308835, precision ER collets for HP No. 309368 – 309378, and for taps No. 309402 – 309418 (not for Holex), ER CP clamping nuts No. 309655; 309665, HP sealing rings No. 309666 – 309668. CP roller bearing wrenches No. 309754; 309756.

Note:
- CP chuck **clamps only nominal Ø up to shank Ø tolerance h10.**
- Use in combination with Fahrion collets.

Form ADB



30 2886

Mini – size 11M (extremely slim design!)

Form ADB

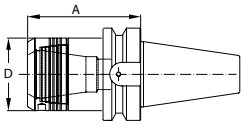
30 2886

Tapered – size 16C

Form AD

30 2884

Standard – sizes 16AD, 25AD and 32AD



Type CP for ER			11M	16C	16AD	25AD	32AD
33F 30 2884	Precision ER collet chuck **CENTRO P**	BT 40 A = 75	–	–	XXX	XXX	XXX
33F 30 2886		BT 40	XXX	XXX	XXX	XXX	XXX
33F 30 2888		BT 40 A = 160	(XXX)	(XXX)	–	–	–
Clamping range		mm	1 – 7	1 – 10	1 – 10	2 – 16	2 – 20
Dimension A (30 2886)		mm	100	100	90	90	90
Ø D		mm	16	24	30	40	50

ISO 7388-2 | JIS B6339 | G 2.5 25000 min⁻¹ | ≤5µm | HSC

Collet chuck, extra slim

- External and internal taper ground.
- Shanks hard turned.
- The collet is clamped by a threaded connection from behind **through** the chuck, **no clamping nut required!**

Advantage: Extremely slim design permits machining of components where access is difficult, e.g. for toolmaking and mould-making.

30 2872 – Large working range and optimised contour for reduced vibration. Cooling with the collet by the tool or along the shank.

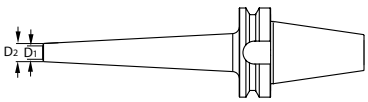
Application: For clamping tools with plain shank to DIN 6499.

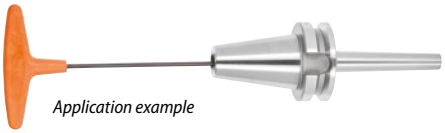
Supplied with: Clamping screw and wrench with T-handle.

Optional extras: Pull studs (PS) No. 308600 – 308806,
PS wrenches No. 308820 – 308835,
GARANT collets No. 309563,
ALBRECHT collets No. 309572 – 309573.

Form A

30 2866





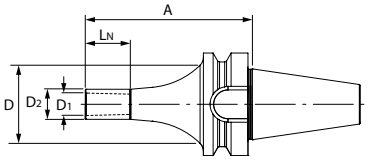
Application example

Clamping range			mm	2-6
31A 30 2866	Garant Collet chuck, extra slim	BT 40 A = 120		XXX
31A 30 2868		BT 40 A = 160		XXX
Ø D_1			mm	9
Ø D_2			mm	13
Ø D			mm	27

Clamping range			mm	1-6
34F 30 2872	ALBRECHT Präzisions Spannfutter Collet chuck, extra slim, with internal cooling	BT 40 A = 120		XXX
Ø D_1			mm	10.1
Ø D_2			mm	13.5
Ø D			mm	34
L_N			mm	20

Form AD

30 2872_1-6



ISO 7388-2	JIS B6339	Form AD	G 6.3 15000 min^{-1}	≤5µm	HPC

Heavy-duty chuck – JIS B6339 (MAS-BT)

30 2861

30 2865

30 2879

- Low friction due to needle bearings.
- Protected with anti-corrosion coating.
- Dust-tight and watertight.
- Very high clamping force prolongs tool life and improves surface quality.
- Flexible clamping range by means of collets.

30 2879 – **Clamping force up to 150 Nm at Ø 12, up to 300 Nm at Ø 16 and up to 400 Nm at Ø 20.**

30 2861/2862 – ■ **Clamping force up 1000 Nm at Ø 20, 4000 Nm at Ø 32.**

30 2865/2870 – ■ **Clamping force up to 1000 Nm.**

Advantage:

30 2879 – Low interference contour due to slim design.

30 2861/2862 – ■ Long tool life.
■ Vibration damping properties.
■ High stability due to strengthened clamping nut.

Application: For clamping tools with plain shanks.

Supplied with: Clamping nut

Optional extras: C wrench No. 628400.
Pull studs No. 308760 – 308795.

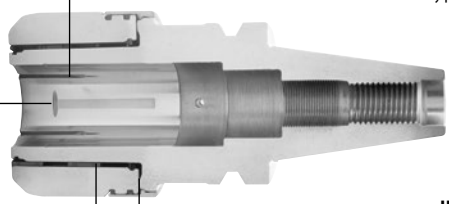
30 2879 – Collets No. 309581 – 309582, tightening wrench No. 309447.

30 2861/2862 – Collets No. 309575 – 309576.

30 2865/2870 – Collets No. 309566 – 309570.

Internal axial recesses
effectively prevent the tool slipping.

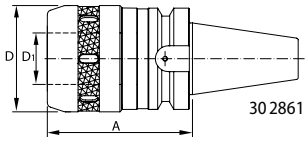
T-slots
take up the oil and grease so that reliable torque transmission is achieved.



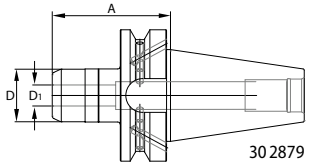
Absolutely smooth running of the clamping nut.

High radial stiffness
due to repeatable clamping accuracy against a flat face, which prevents misalignment and ensures highly accurate machining coupled with long tool life.

Ø D_1			mm	12	16	20	32
33K 30 2861	NT TOOL	Heavy-duty chuck	BT 40	–	–	XXX	XXX
33K 30 2862	NT TOOL	Heavy-duty chuck	BT 50	–	–	(XXX)	(XXX)
32A 30 2865	HOLEX	Heavy-duty chuck	BT 40	–	–	XXX	XXX
32A 30 2870	HOLEX	Heavy-duty chuck	BT 50	–	–	XXX	XXX
32A 30 2879	HOLEX	Heavy-duty chuck **slim**	BT 40	XXX	XXX	XXX	–
Dimension A			mm	70	70	90	105
Ø D (30 2861, 30 2862)			mm	–	–	52	73
Ø D (30 2865, 30 2870)			mm	–	–	52	66
Ø D (30 2879)			mm	30	38	44	–
suitable hook spanner 628400 (30 2861, 30 2862, 30 2865, 30 2870)				–	–	52 / 55	68 / 75
suitable tightening wrench 309747 (30 2879)				S10	S16	S20	–



30 2861



30 2879

Garant Hydraulic chucks

Temperature-resistant
Due to the sintered structure and the resulting enclosed system, no soldered pressure chambers are necessary, which enables use of the chuck up to 120 °C.

For reliable
clamping of tool shanks forms HA, HB and HE.

HA-HB-HE

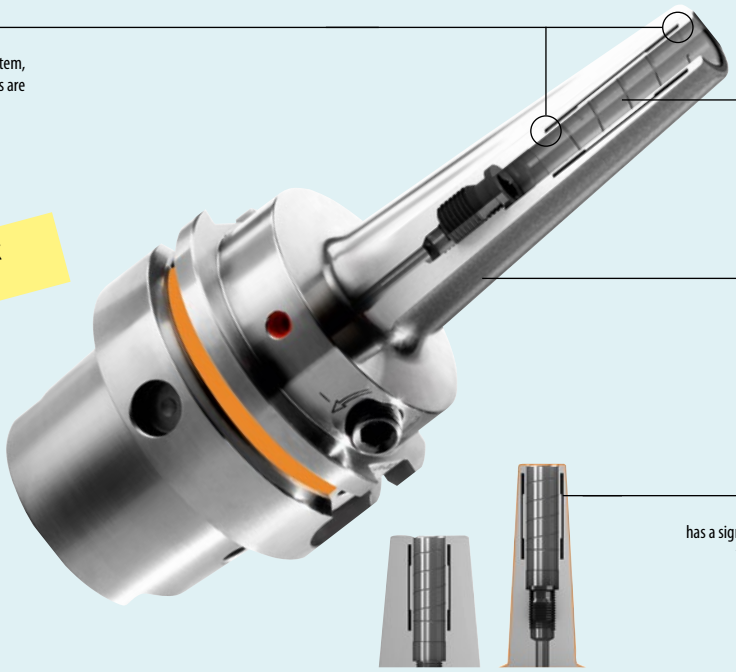
High precision
Concentricity ≤ 3 µm.

µm

Exceptionally slim
The GARANT hydraulic chuck has a significantly more streamlined design than the standard hydraulic chuck.

mm

Available as BT/SK, HSK and BT arbors



ISO 7388-2 | JIS B6339 | ≤5µm | HPC

Face mill adapter – JIS B 6339 (MAS-BT)

Taper shank, spigots, and contact surfaces ground on collar.
Optional extras: Pull studs (PS) No. 308760 – 308806. Special toggle spanner No. 309840.

Combination face mill adapters

DIN 6358

30 2895/2905/2955 – All shanks hard turned (for smooth running!). Balancing quality G2.5 / 25,000 rpm. Form ADB.
30 2897/2917/2957 – All shanks fine bead blasted. Balancing quality G6.3 / 18,000 rpm. Form A.
30 2900/2920/2965 – All shanks burnished. Balancing quality G6.3 / 15,000 rpm. Form ADB.
Application: **With drive key** for face mills with longitudinal slot, e.g. DIN 841.
With drive ring for face mills with crosswise slot DIN 1880 and cutter heads DIN 1830.
Supplied with: Drive key, face mill drive ring, and lock screw.

Spigot ∅ d_1				mm	16	22	27	32	40
31A	30 2895	Garant	Combination face mill adapter **Form ADB**	**BT 40 short**	XXX	XXX	XXX	XXX	XXX
32A	30 2897	HOLEX	Combination face mill adapter **Form A**	**BT 40 short**	XXX	XXX	XXX	XXX	XXX
36E	30 2900	EROGLU	Combination face mill adapter **Form ADB**	**BT 40 short**	XXX	XXX	XXX	XXX	(XXX)
31A	30 2905	Garant		**BT 40 A = 100**	XXX	XXX	XXX	XXX	XXX
new 32A	30 2917	HOLEX	Combination face mill adapter **Form A**	**BT 40 A = 100**	XXX	XXX	XXX	XXX	–
36E	30 2920	EROGLU	Combination face mill adapter **Form ADB**	**BT 40 A = 100**	XXX	XXX	–	–	–
31A	30 2955	Garant		**BT 50 A = 100**	XXX	XXX	XXX	XXX	XXX
new 32A	30 2957	HOLEX	Combination face mill adapter **Form A**	**BT 50 A = 100**	XXX	XXX	XXX	XXX	–
36E	30 2965	EROGLU	Combination face mill adapter **Form ADB**	**BT 50 A = 100**	XXX	XXX	XXX	XXX	XXX
Dimension A (30 2895, 30 2897)				mm	55	55	55	60	70
Dimension A (30 2900)				mm	55	55	55	60	60
∅ D				mm	32	40	48	58	70
Spare milling cutter lock screw 309860					16	22	27	32	40
Spare face mill drive ring 309870					16	22	27	32	40
suitable special toggle spanner 309840					16	22	27	32	40

G 2.5 25000 min^{-1}

30 2895

G 2.5 25000 min^{-1}

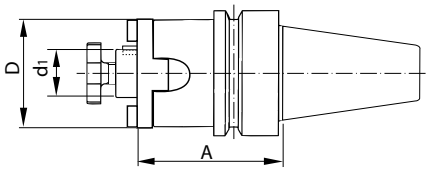
30 2905

G 6,3 18000 min^{-1}

30 2897

G 6.3 15000 min^{-1}

30 2900



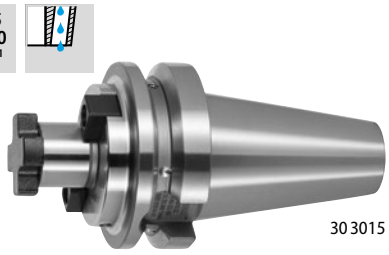
Face mill arbors

DIN 6357

30 3007/3017/3027/3037 –
All shanks fine bead blasted. Balancing quality G6.3 / 18,000 rpm. Form A.
30 3010–3015/3025/3035 –
All shanks hard turned (for smooth running!). Balancing quality G2.5 / 25,000 rpm. Form ADB. With **4** cooling channel bores.
30 3020/3045 – All shanks burnished. Balancing quality G6.3 / 15,000 rpm. Form ADB.
Supplied with: Lock screw.

Spigot ∅ d_1				mm	16	22	27	32	40
31A	30 3010	Garant	Face mill arbor **with cooling channel bore form ADB**	**BT 30 short**	XXX	XXX	XXX	–	–
32A	30 3007	HOLEX	Face mill arbor **Form A**	**BT 30 short**	XXX	XXX	XXX	–	–
31A	30 3015	Garant	Face mill arbor **with cooling channel bore form ADB**	**BT 40 short**	XXX	XXX	XXX	XXX	XXX
32A	30 3017	HOLEX	Face mill arbor **Form A**	**BT 40 short**	XXX	XXX	XXX	XXX	XXX
36E	30 3020	EROGLU	Face mill arbor **with cooling channel bore form ADB**	**BT 40 short**	–	XXX	XXX	XXX	(XXX)
31A	30 3025	Garant		**BT 40 A = 100**	XXX	XXX	XXX	XXX	XXX

G 2.5 25000 min^{-1}



30 3015

G 2.5 25000 min^{-1}

30 3025

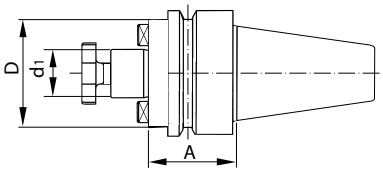
G 6,3 18000 min^{-1}

30 3017

Spigot ∅ d_1			mm	16	22	27	32	40
new 32A **30 3027**	HOLEX	Face mill arbor **Form A**	**BT 40 A = 100**	XXX	XXX	XXX	XXX	–
31A **30 3035**	Garant	Face mill arbor **with cooling channel bore form ADB**	**BT 50 A = 100**	–	XXX	XXX	XXX	XXX
32A **30 3037**	HOLEX	Face mill arbor **Form A**	**BT 50 A = 100**	–	XXX	XXX	XXX	XXX
36E **30 3045**	EROGLU	Face mill arbor **with cooling channel bore form ADB**	**BT 50 A = 100**	–	XXX	XXX	(XXX)	(XXX)
Dimension A (30 3010, 30 3007, 30 3020)			mm	35	40	40	50	50
Dimension A (30 3015, 30 3017)			mm	35	35	35	50	50
∅ D (30 3010, 30 3007, 30 3015, 30 3017, 30 3025, 30 3027)			mm	38	48	50	78	89
∅ D (30 3020, 30 3045)			mm	–	48	58	78	88
∅ D (30 3035, 30 3037)			mm	–	48	60	78	89
Spare milling cutter lock screw 309860				16	22	27	32	40
suitable special toggle spanner 309840				16	22	27	32	40

G 2.5 25000 min^{-1}

30 3035



DIN 6357 | DIN 69882-3 | DIN 69893 | ISO 12164-1 | Form A | G 6.3 8000 min^{-1} | ≤6µm | HPC

Garant Face mill arbors, vibration damped

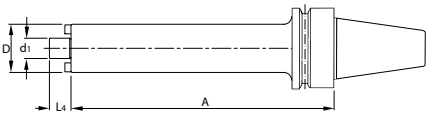
- Plain shank.
- Taper shank, spigot, and all contact surfaces are ground at the collar.
- With Balluffchip bore.
- Larger collar contact face..
- **Vibration damped version, arbor with vibration-damping core.**

Advantage: Significantly lower tendency to vibrate. Considerable increase in feed rate.
Supplied with: Cutter lock screw and drive dog.
Optional extras: Special toggle spanner No. 309840.

Note: Further sizes on request.

30 3050

Spigot ∅ d_1			mm	16	22	27	32
31A **30 3050**	Face mill arbor **vibration damped**	**BT 40 A = 200**		XXX	XXX	XXX	–
31A **30 3051**		**BT 40 A = 300**		XXX	XXX	–	–
31A **30 3054**		**BT 50 A = 200**		XXX	XXX	XXX	–
31A **30 3055**		**BT 50 A = 300**		XXX	XXX	XXX	XXX
31A **30 3056**		**BT 50 A = 400**		XXX	XXX	XXX	–
∅ D			mm	38	48	58	78
L_4			mm	17	19	21	24



DIN 6383 | ISO 7388-2 | JIS B6339 | G 6.3 15000 min^{-1} | ≤8µm

HOLEX Reducing adapters for tools with MT shank – JIS B 6339 (MAS-BT)

Ground internally and externally.
Application: For clamping tools **with MT shank.**
Optional extras: Pull studs (PS) No. 308760 – 308806.

Form AD

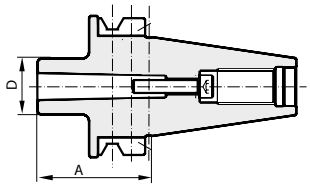
30 3082

For MT tools with tang to DIN 228-B

MT internal				1	2	3	4
32A **30 3082**	Reducing adapter SK / MT **for tangs, form AD**	**BT 40**		XXX	XXX	XXX	XXX
32A **30 3087**		**BT 50**		XXX	XXX	XXX	XXX
Dimension A (30 3082)			mm	50	50	70	95
Dimension A (30 3087)			mm	45	60	65	95
∅ D			mm	25	32	40	48

Form A

30 3092



For MT tools with draw thread to DIN 228-A

MT internal				2	3	4
32A **30 3092**	Reducing adapter SK / MT **for locking threads, form A**	**BT 40**		XXX	XXX	XXX
32A **30 3097**		**BT 50**		XXX	XXX	XXX
Dimension A (30 3092)			mm	50	70	95
Dimension A (30 3097)			mm	60	65	70
∅ D			mm	32	40	48

ISO 7388-2 | JIS B6339 | Form ADB | G 2.5 25000 min^{-1} | HPC

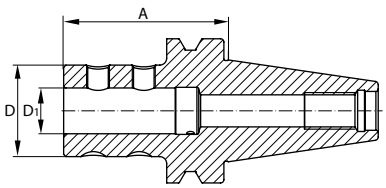
Garant Arbor for indexable drill - JIS B 6339 (MAS-BT)

- All shanks hard turned.
- Position of the grub screw for countersinking in the indexable drill offset by 0.4 mm.
- **When tightening** the increased contact face ∅ is clamped against the front face of the arbor.
- **Better support,** allowing **higher feed rates.**
- **High concentricity** thanks to the mating surface being ground flat to 3µm.

Suitable for: All indexable drills with parallel shank to DIN 6595, Part 1.
Application: **For mounting all standard indexable drills to DIN 6595, Part 1.**
Optional extras: Pull studs (PS) No. 308760 – 308806.

30 3128

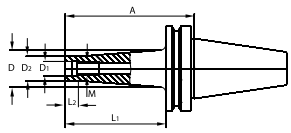
for shank ∅ D_1		mm	20	25	32	40
31A 30 3128	Arbor for indexable drills Form ADB	BT 40	XXX	XXX	XXX	XXX
31A 30 3129		BT 50	XXX	XXX	XXX	XXX
Dimension A (30 3128)		mm	72	76	80	100
Dimension A (30 3129)		mm	90	90	90	100
∅ D		mm	40	45	52	60



ISO 7388-2 | JIS B6339 | Form ADB | G 2.5 25000 min^{-1} | ≤3µm | HSC

Garant Arbors for threaded milling cutter – JIS B 6339 (MAS-BT)

All shanks hard turned.
Application: To take screw-in milling cutters with thread.
Optional extras: Pull studs (PS) No. 308760 – 308806.



30 3139

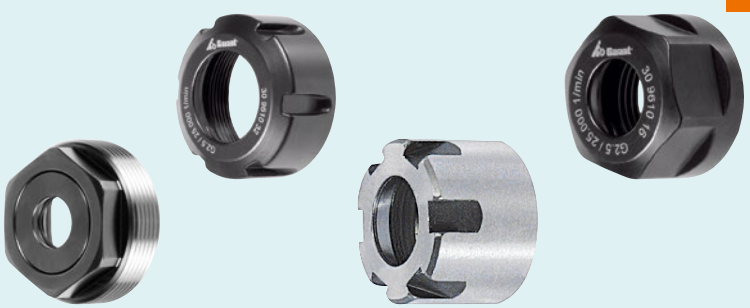
new

Thread M × Usable length L_1	31A 30 3133	31A 30 3139	31A 30 3141	Dimension A		∅ D_1 tolerance IT6	∅ D_2	∅ D	L_1	L_2	
	Arbor for screw-in milling cutters with thread			30 3133 30 3141	30 3139					30 3133 30 3139	30 3141
	BT 30	BT 40	BT 50	mm	mm	mm	mm	mm	mm	mm	mm
M6×25	XXX	XXX	–	47	52	6.5	10	13	25	5	–
M6×50	–	XXX	–	–	77	6.5	10	20	50	5	–
M6×75	–	XXX	–	–	102	6.5	10	23	75	5	–
M8×25	XXX	XXX	–	47	52	8.5	13	15	25	5	–
M8×50	–	XXX	XXX	88	77	8.5	13	23	50	5	5
M8×75	–	XXX	–	–	102	8.5	13	23	75	5	–
M10×25	XXX	XXX	–	47	52	10.5	18	20	25	5	–
M10×50	–	XXX	XXX	88	77	10.5	18	23	50	5	5
M10×100	–	XXX	XXX	138	127	10.5	18	32	100	5	10
M12×25	XXX	XXX	–	47	52	12.5	21	24	25	5	–
M12×50	–	–	XXX	88	–	12.5	21	24	50	–	10
M12×75	–	XXX	–	–	102	12.5	21	31	75	5	–
M12×100	–	–	XXX	138	–	12.5	21	33	100	–	10
M12×125	–	XXX	–	–	152	12.5	21	36	125	5	–
M16×25	XXX	XXX	–	47	52	17	29	29	25	5	–
M16×50	–	–	XXX	88	–	17	29	29	50	–	10
M16×75	–	XXX	–	–	102	17	29	34	75	5	–
M16×100	–	–	XXX	138	–	17	29	36	100	–	10
M16×125	–	XXX	–	–	152	17	29	40	125	5	–
M16×150	–	–	XXX	188	–	17	29	42.5	150	–	10

Garant HOLEX High-performance clamping nuts for ER-collet chuck

Only the perfect interaction of collet chuck, collet and **high-quality clamping nut** can ensure good system concentricity.

- High-quality processing of clamping nuts.
- Optimum hardness to reduce wear.
- Ground thread.
- Balanced nuts.
- Extremely simple handling: quickly clicking collets in and out.



ISO 7388-2 | JIS B6339

Short drill chucks – with chuck key operation – JIS B6339 (MAS-BT)

For clockwise and anticlockwise rotation.

30 3165–3172 –
- Slim design.
- Specific coolant transfer to tools with IC.
- Optimum holding torques at the tool.

30 3171–3176 – Concentricity ≤ 20 µm.

Supplied with: **Clamping wrench.**

Optional extras: Pull studs (PS) No. 308760 – 308806. Pull stud wrenches No. 308820; 308835.

Form ADB | ≤50 bar | G 2.5 25000 min⁻¹ | ≤20µm

30 3175_0,5-16

30 3175_0,3-10

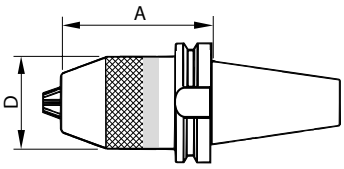
Form AD | ≤50 bar | G 2.5 25000 min⁻¹ | ≤20µm | ≤14 Nm

30 3171_0,5-13

30 3171_1-16

Form A | G 6.3 12000 min⁻¹ | ≤50µm | ≤14 Nm

30 3165



Clamping range			mm	0,3-10	0,5-13	0,5-16	1-16	2,5-16
31B 30 3171	Garant	Short drill chuck Form AD	BT 40	–	XXX	–	XXX	–
31B 30 3172	Garant	Short drill chuck Form AD	BT 50	–	–	–	XXX	–
31B 30 3175	Garant	Short drill chuck Form ADB	BT 40	XXX	–	XXX	–	–
31B 30 3176	Garant	Short drill chuck Form ADB	BT 50	–	–	XXX	–	–
32K 30 3165	HOLEX	Short drill chuck Form A	BT 40	–	–	–	–	XXX
32K 30 3166	HOLEX	Short drill chuck Form A	BT 50	–	–	–	–	XXX
Dimension A (30 3171, 30 3175, 30 3165)			mm	73	92	98	95	95
Dimension A (30 3172, 30 3176, 30 3166)			mm	–	–	110	106	106
∅ D			mm	38	43	57	50	50
Spare Torx® screwdriver 625220				–	TX25	–	TX25	TX25
Spare hexagon screwdriver 627425				4 AF	–	6 AF	–	–

Clamping range			mm	0,3-8	0,5-13	2,5-16
33W 30 3196	WTE	Short drill chuck Form A	BT 30	–	XXX	–
33W 30 3197	WTE	Short drill chuck Form A	BT 40	XXX	XXX	XXX
Dimension A (30 3196)			mm	–	96	–
Dimension A (30 3197)			mm	78	98	103
∅ D			mm	36	50	57
Spare hexagon screwdriver 627425				SW 4	6 AF	6 AF

Form A | G 2.5 25000 min⁻¹ | ≤30µm

30 3197

ISO 7388-2 | JIS B6339 | Form ADB | G 2.5 25000 min⁻¹ | ≤3µm | HSC | HPC

Garant Shrink-fit chucks 3° (for tool-making and mould-making) – JIS B6339 (MAS-BT)

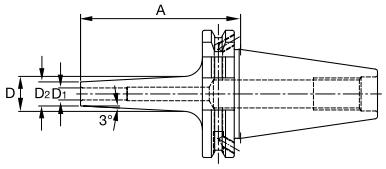
- All shanks hard turned.
- **Extra slim design (3° contour).**

Application:
- **Especially for tool and mould making.**
- Wherever reduced interference contours are required.
- For clamping tools with shank tolerance h6.

Optional extras: Pull studs (PS) No. 308760 – 308806, shrink-fit chuck extensions No. 302410, sizes 12/3 and 12/4, shrink-fit units No. 354210 – 304450, PS wrenches No. 308820 – 308835.

Note: No length adjustment available!

30 3443



Clamping range ∅ D_1			mm	3	4	5	6	8	10	12
31A 30 3443	Shrink-fit chuck 3°	BT 40 A = 90		XXX	XXX	XXX	XXX	XXX	XXX	XXX
∅ D			mm	14	15	16	19	21	23	25
∅ D_2			mm	9	10	11	12	14	16	18

ISO 7388-2 | JIS B6339 | G 2.5 25000 min^{-1} | ≤3µm | HSC | HPC

Garant Shrink-fit chucks 4.5° – JIS B6339 (MAS-BT)

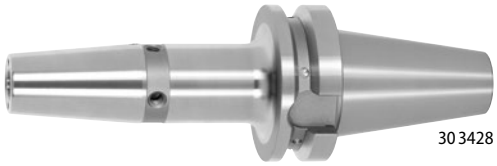
- Integral tool length adjustment, range 10 mm (from ∅ 6).
- Size 3-5 for carbide, from size 6 for HSS and carbide.

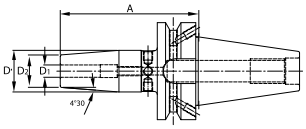
Standard: **Similar to E-DIN 69882-8, form G.**
Application: For clamping tools with parallel shank to h6 tolerance.
Optional extras: Pull studs (PS), No. 308760 – 308806, shrink-fit chuck extension No. 302410 – 302417, shrink-fit units No. 354210 – 354400.

Form AD

30 3405

Form ADB


30 3428



Form ADB

30 3410

Clamping range ∅ D_1			mm	3	4	5	6	8	10	12	14	16	18	20	25
31A	30 3405	Shrink-fit chuck **Form AD**	BT 30 short	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	–
new 31A	30 3407	Shrink-fit chuck **Form AD with cooling channel bores**	BT 30 short	–	–	–	XXX	XXX	XXX	XXX	–	XXX	–	XXX	–
31A	30 3410	Shrink-fit chuck **Form ADB**	BT 40 short	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
31A	30 3415	Shrink-fit chuck, **Form ADB with cooling channel bore**	BT 40 short	–	–	–	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
31A	30 3425	Shrink-fit chuck **Form ADB**	BT 40 A = 120	–	–	–	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
31A	30 3427		BT 40 A = 130	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
31A	30 3428	Shrink-fit chucks **Form ADB with cooling channel bore**	BT 40 A = 130	–	–	–	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	–
31A	30 3430	Shrink-fit chuck **Form ADB**	BT 40 A = 160	–	–	–	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
31A	30 3445		BT 50 A = 100	–	–	–	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
Dimension A (30 3405, 30 3407)			mm	80	80	80	80	80	80	80	80	80	90	90	–
Dimension A (30 3410, 30 3415)			mm	90	90	90	90	90	90	90	90	90	90	90	100
∅ D			mm	17	17	17	27	27	32	32	34	34	42	42	53
∅ D_2			mm	12	12	12	21	21	24	24	27	27	33	33	44

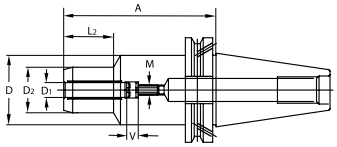
ISO 7388-2 | JIS B6339 | Form ADB | G 2.5 25000 min^{-1} | ≤3µm | HPC

WTE Hydraulic chuck (HD chuck) – JIS B6339 (MAS-BT)

- **Radial run-out ≤ 3 µm.**
- Axial length adjustment (travel 10 mm) available.
- Flexible due to the use of reducing sleeves.
- Coolant pressure up to 80 bar.

Application: For drilling, reaming, and **finish** milling.
Supplied with: Hexagon cross-bar wrench.
Optional extras: Pull studs (PS) No. 308760 – 308806, Slotted reducing sleeves No. 302135 – 302180.

30 3455



Clamping range ∅ D_1			mm	6	8	10	12	16	20	25	32
33W	30 3455	HD chuck **medium, slim, Form ADB**	BT 40	(XXX)	(XXX)	(XXX)	(XXX)	(XXX)	(XXX)	(XXX)	(XXX)
Dimension A			mm	90							
∅ D_2			mm	26	28	30	32	38	42	55	63
∅ D			mm	49.5	49.5	49.5	49.5	49.5	49.5	52	62
L_2			mm	29	30	35	40	45	47	50	48
M				M5	M6	M8×1	M10×1	M12×1	M16×1	M16×1	M16×1

ISO 7388-2 | JIS B6339 | Form AD | G 2.5 25000 min⁻¹ | ≤3µm | HPC | HSC

Garant Slim hydraulic chuck 3° – JIS B6339 (MAS-BT)

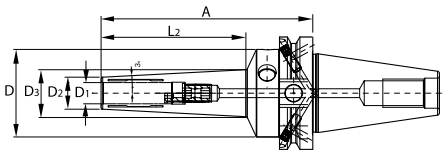
- **Extremely slim design** (3° contour).
- Ideal damping characteristics.
- Axial length adjustment facility.
- Shanks hard turned.

Application:
- Especially for tool and mould making.
- **Wherever reduced interference contours are required.**
- For drilling, reaming and milling.
- For clamping tools with shank tolerance h6.

Supplied with: Hexagon socket drive with T-handle.

Optional extras: Pull studs (PS) No. 308760 – 308806, Slotted reducing sleeves No. 302135 – 302180.

30 3465



Clamping ∅ D_1			mm	3	4	5	6	8	10	12	16	20
31A 30 3446	Slim hydraulic chuck	BT 30 A = 85		XXX	XXX	XXX	XXX	XXX	XXX	XXX	–	–
31A 30 3465		BT 40 A = 120		XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
31A 30 3467		BT 40 A = 160		–	–	–	XXX	XXX	XXX	XXX	–	–
31A 30 3468		BT 40 A = 200		–	–	–	XXX	XXX	XXX	XXX	–	–
∅ D_2 (30 3446)			mm	10	12	13	14	16	18	20	–	–
∅ D_2 (30 3465)			mm	9	10	11	12	14	16	18	24	28
∅ D_2 (30 3467, 30 3468)			mm	–	–	–	16	18	20	22	–	–
∅ D_3 (30 3446)			mm	14.7	16.7	17.7	18.8	20.8	22.9	24.9	–	–
∅ D_3 (30 3465)			mm	16.5	17.5	18.5	19.5	21.5	23.7	25.8	31.4	35.5
∅ D_3 (30 3467)			mm	–	–	–	33.5	34.6	36.3	37.9	–	–
∅ D_3 (30 3468)			mm	–	–	–	37.9	38.9	40.6	42.2	–	–
∅ D (30 3446)			mm	40	40	40	40	40	40	40	–	–
∅ D (30 3465, 30 3467, 30 3468)			mm					49.5				
L_2 (30 3446)			mm	45	45	45	46	46	47	47	–	–
L_2 (30 3465)			mm	71	71	71	73	74	74	75	79	80
L_2 (30 3467)			mm	–	–	–	111	111.5	113	114	–	–
L_2 (30 3468)			mm	–	–	–	152.5	152.5	154	155	–	–

ISO 7388-2 | JIS B6339 | Form ADB | G 2.5 25000 min⁻¹ | ≤3µm | HSC | HPC

Hydraulic chuck – version HT (High Torque) – JIS B6339 (MAS-BT)

- Very high overall stiffness due to optimised design.
- Axial length adjustment, adjustment travel 10 mm.

Advantage:
- **Maximum transmissible torque 550 Nm,** version HT (High Torque), for high process reliability.
- **Ideal damping characteristics,** resulting in optimum surface finishes, increased tool life and spindle protection.
- **Temperature resistance up to 120 °C.**

Application: **Especially for heavy-duty milling.**

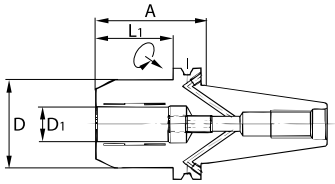
Supplied with: Hexagon cross-bar wrench.

Optional extras: Pull studs (PS) No. 308760 – 308806.

30 3450

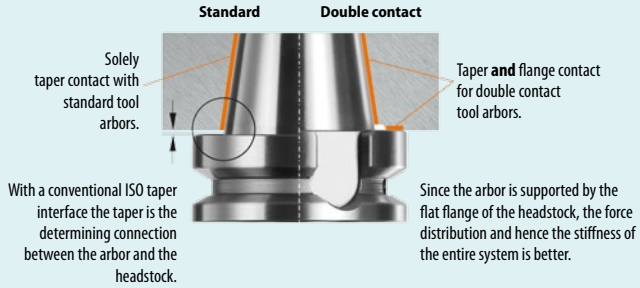
30 3451

30 3459



Clamping range ∅ D_1				mm	12	16	20	32
31H 30 3450	Garant	HT chuck	BT 40 short		XXX	–	XXX	–
31H 30 3451	Garant	HT chuck **with cooling channel bores**	BT 40 short		XXX	XXX	XXX	–
new 32A 30 3459	HOLEX	HT chuck	BT 40 short		–	–	XXX	–
31H 30 3452	Garant	HT chuck	BT 50 short		–	–	XXX	XXX
new 32A 30 3469	HOLEX	HT chuck	BT 50 short		–	–	XXX	–
Dimension A (30 3450, 30 3451, 30 3459)				mm	58	72.5	72.5	–
Dimension A (30 3452, 30 3469)				mm	–	–	83.5	90
∅ D (30 3450, 30 3451, 30 3452)				mm	42	46	49	72
∅ D (30 3459, 30 3469)				mm	–	–	49.25	–
L_1 (30 3450, 30 3459)				mm	31	–	45	–
L_1 (30 3451, 30 3452, 30 3469)				mm	31	45.5	45.5	52
suitable reducing adapter					302140 / 302135	–	302160 / 302155	302180 / 302175

Garant Tool arbors JIS B 6339 (MAS-BT) with double contact



The double contact between the taper **and** the flat flange creates a more stable and precise clamping situation.

The result:

- Better surface quality.
- Longer tool life times.
- Consistent seating in the headstock, even at high speeds.
- Smaller radial run-out.

Send us your enquiry or ask your contact person.

DIN 6359 | ISO 7388-2 | JIS B6339 | Form AD | G 2.5 25000 min^{-1} | ≤3µm | HPC | BT-DC

Garant Side lock arbor (Weldon) – JIS B6339 (MAS-BT) with double contact

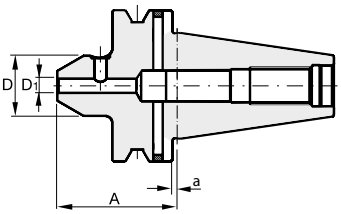
All shanks hard turned (for smooth running!). With Balluffchip bore.

Application: For clamping tools with side flats to DIN 1835 B and DIN 6535 HB.

Optional extras: Pull studs (PS) No. 308760 – 308806. Pull stud wrenches No. 308820; 308835.

30 3640

Clamping range ∅ D_1		mm	6	8	10	12	16	20	25
31A 30 3610	Side lock arbor **Form AD**	BT 30 short	XXX	XXX	XXX	XXX	XXX	XXX	–
31A 30 3640		BT 40 short	XXX	XXX	XXX	XXX	XXX	XXX	XXX
31A 30 3670		BT 50 short	XXX	XXX	XXX	XXX	XXX	XXX	XXX
Dimension A (30 3610)		mm	50	50	50	55	63	70	–
Dimension A (30 3640)		mm	50	50	63	63	63	63	90
Dimension A (30 3670)		mm	63	63	70	80	80	80	100
a (30 3610, 30 3640)		mm				1			
a (30 3670)		mm				1.5			
∅ D		mm	25	28	35	42	48	52	65
Spare clamping screw 309900			6	8	10	12	16	20	25



ISO 7388-2 | JIS B6339 | Form AD | G 2.5 25000 min^{-1} | ≤3µm | HSC | BT-DC

Garant ER collet chuck – JIS B6339 (MAS-BT) with double contact

Taper ground internally and externally. All shanks hard turned (for smooth running!). With Balluffchip bore.

- High-quality precision clamping nut.
- Clamping nut balanced for HSM (G2.5/25,000 rpm).
- Optimum wear characteristics and torque transmission due to the coated precision clamping nut.

Application: For clamping tools with parallel shank in collets to **DIN 6499 Form A and B.**

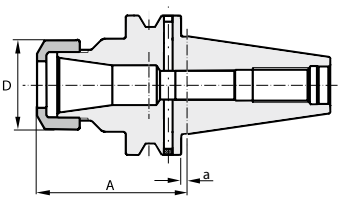
Supplied with: ER clamping nut.

Optional extras: ER collets No. 308881 – 309434, ER chuck key No. 309680 – 309720.
Pull studs (PS) No. 308760 – 308806. Pull stud wrenches No. 308820; 308835.

Note: Matching clamping nut No. 309580 or 309610.

30 3710

for ER collets		ER	16	20	25	32	40
31A 30 3690	ER Collet Chuck **Form AD**	BT 30 short	XXX	XXX	XXX	XXX	–
31A 30 3710		BT 40 short	XXX	–	XXX	XXX	XXX
31A 30 3740		BT 50 short	XXX	–	XXX	XXX	XXX
Clamping range		mm	0.5 – 10	1 – 13	1 – 16	2 – 20	3 – 26
Dimension A (30 3690)		mm	60	60	60	70	–
Dimension A (30 3710)		mm	70	–	70	70	80
Dimension A (30 3740)		mm	80	–	80	80	80
a (30 3690, 30 3710)		mm			1		
a (30 3740)		mm	1.5	–	1.5	1.5	1.5
∅ D		mm	28	34	42	50	63
Spare ER clamping nut 309580			16	20	25	32	40
ER clamping wrench 309680			16	20	25	32	40



DIN 6358 | ISO 7388-2 | JIS B6339 | Form AD | G 2.5 25000 min^{-1} | ≤5µm | HPC | BT-DC

Garant® Combination face mill adapter – JIS B6339 (MAS-BT) with double contact

Taper shank, spigots, and contact surfaces ground on collar. All shanks hard turned (for smooth running!). With Balluffchip bore.

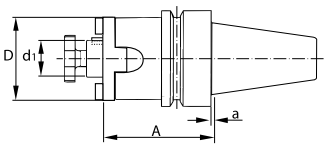
Application: **With drive key** for face mills with longitudinal slot, e.g. DIN 841.
With drive ring for face mills with crosswise slot DIN 1880 and cutter heads DIN 1830.

Supplied with: Drive key, face mill drive ring, and lock screw.

Optional extras: Pull studs (PS) No. 308760 – 308806. Special toggle spanner No. 309840.

30 3760

Spigot ∅ d_1		mm	16	22	27	32
31A 30 3760	Combination face mill adapter **Form AD**	**BT 40 short**	XXX	XXX	XXX	XXX
Dimension A		mm	55	55	55	60
a		mm	1			
∅ D		mm	32	40	48	58
Spare milling cutter lock screw 309860			16	22	27	32
Spare face mill drive ring 309870			16	22	27	32
suitable special toggle spanner 309840			16	22	27	32



DIN 6357 | ISO 7388-2 | JIS B6339 | Form AD | G 2.5 25000 min^{-1} | ≤5µm | HPC | BT-DC

Garant® Face mill arbors – JIS B6339 (MAS-BT) with double contact

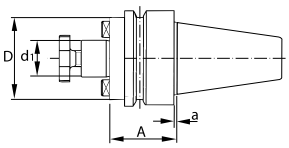
All shanks hard turned (for smooth running!). With Balluffchip bore and coolant duct bores.

Supplied with: Lock screw.

Optional extras: Pull studs (PS) No. 308760 – 308806. Special toggle spanner No. 309840.

30 3780

Spigot ∅ d_1		mm	16	22	27	32
31A 30 3780	Face mill arbor **Form AD**	**BT 30 short**	XXX	XXX	XXX	–
31A 30 3800		**BT 40 short**	XXX	XXX	XXX	XXX
Dimension A (30 3780)		mm	35	40	40	–
Dimension A (30 3800)		mm	35	35	35	50
a		mm	1			
∅ D		mm	38	48	50	78
Spare milling cutter lock screw 309860			16	22	27	32
suitable special toggle spanner 309840			16	22	27	32



ISO 7388-2 | JIS B6339 | Form AD | G 2.5 25000 min^{-1} | ≤3µm | HSC | HPC | BT-DC

Garant® Shrink-fit chucks 4.5° – JIS B6339 (MAS-BT) with double contact

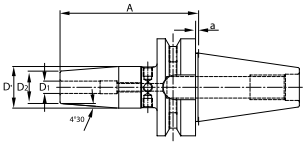
- High-temperature steel.
- Integral tool length adjustment, adjustment track 10 mm.
- Suitable for shrink fitting of HSS and carbide tools.
- All shanks hard turned (for smooth running!).
- With Balluffchip bore.

Standard: **Similar to E-DIN 69882-8, form G.**

Application: For clamping tools with parallel shank to h6 tolerance.

Optional extras: Pull studs (PS), No. 308760 – 308806,
Shrink-fit chuck extension No. 302410 – 302417,
Shrink-fit units No. 354210 – 354400.

30 3830



Clamping range ∅ D_1		mm	6	8	10	12	16	20	25
31A 30 3830	Shrink-fit chuck **Form AD**	**BT 30 short**	XXX	XXX	XXX	XXX	XXX	XXX	–
31A 30 3850		**BT 40 short**	XXX	XXX	XXX	XXX	XXX	XXX	XXX
Dimension A (30 3830)		mm	80	80	80	80	80	90	–
Dimension A (30 3850)		mm	90	90	90	90	90	90	100
a		mm				1			
∅ D		mm	27	27	32	32	34	42	53
∅ D_2		mm	21	21	24	24	27	33	44

The hollow shank interface HSK – Forms and features

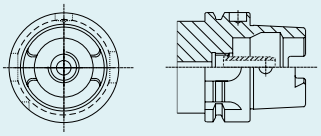
► Note: See page 792 for information on ISO taper (SK) – interfaces.

Taper hollow shanks for automatic tool change

With tool gripper groove

ISO 12164-1 (DIN 69893-1 Form A and Form T)

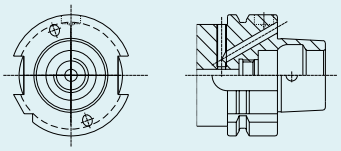
DIN 69893



- Used for machining centres, milling machines, special machines with automatic tool change.
- **Pipe for central axial coolant feed.**
- Torque transmission by **2 driving slots** at the end of the taper. **For Form T, the tolerance (dimension b5) is narrowed.**
- **2 collar grooves** for tool magazine, positioning notch.
- Bore for data carrier DIN 69 873 in the collar.

DIN 69893-2 Form B

DIN 69893

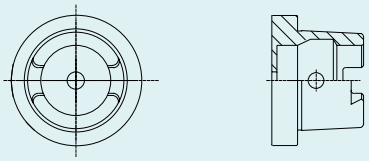


- Used for machining centres, heavy duty milling machines, lathes.
- With enlarged collar and position notch.
- **Decentralised coolant supply via the collar or central supply via the coolant pipe.**
- Torque transmission by **2 collar grooves.**
- Bore for data carrier DIN 69 873 in the collar.

Taper hollow shanks for manual tool change

ISO 12164-1 (DIN 69893-1 Form C)

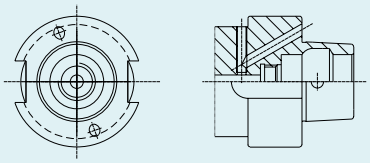
DIN 69893



- Preferred for use on spindles in transfer lines and special machines without automatic tool change or stub drill spindles and tool extensions / reducers.
- **Central axial coolant feed.**
- Torque transmission by **2 driving slots** at the end of the taper.

DIN 69893-2 Form D

DIN 69893



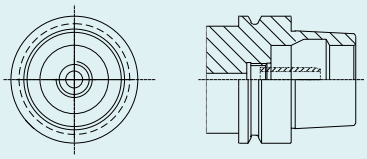
- Used in all areas which require a large flat face for even better support during manual tool changing.
- With enlarged collar.
- **Decentralised coolant supply via the collar or central supply via the coolant pipe.**
- Torque transmission by **2 collar grooves.**

Taper hollow shanks for higher speeds (HSC)

With tool gripper groove

Prelim standard (DIN 69893-5 Form E)

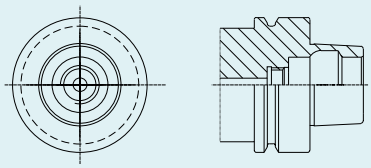
DIN 69893



- Used for high frequency spindles, woodworking machines.
- Rotationally symmetrical, **without any driving slot.**
- Torque transmission by friction.
- **Pipe for central coolant feed.**

E-DIN 69893-6 Form F

DIN 69893



- With reduced taper.

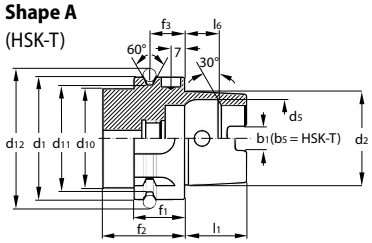
The HSK interface has the following advantages compared to the ISO taper:

- High repetition accuracy when changing tools.
- Fixed axial positioning due to flat face.
- Suitable for high-speed cutting.
- No pull-studs required.

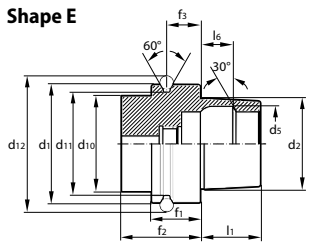
Material:

- Special steel for highly stressed components.
- Surface hardness: 58 – 62 HRC.
- **Tensile strength at core at least 1000 N/mm2.**

Shape A
(HSK-T)



Shape E



HSK	b1 ± 0.04	b5 ± 0.035	d1*) h10	d2	d5 H11	d10 max.	d11 -0.1	d12 -0.1	f1 -0.1	f2 min.	f3 ±0.1	l1 −0.2	l6 JS10
32	7.05	6.932	32	24.007	20.5	26	26.5	37	20	35	16	16	8.92
40	8.05	7.932	40	30.007	25.5	34	34.8	45	20	35	16	20	11.42
50	10.54	10.425	50	38.009	32	42	43	59.30	26	42	18	25	14.13
63	12.54	12.425	63	48.010	40	53	55	72.30	26	42	18	32	18.13
80	16.04	15.93	80	60.012	50	68	70	88.80	26	42	18	40	22.85
100	20.02	19.91	100	75.013	63	88	92	109.75	29	45	20	50	28.56

*) Nominal Ø d_1 = collar Ø

ISO 12164-1 | DIN 69882-4 | DIN 69893 | ≤3µm | HSC | HPC

Side lock arbor – ISO 12164 (DIN 69893)

- With Balluffchip bore.
- HSK mating faces machined.

30 4272/4305/4328/4336/4392/4402/4411 – With **coolant hole bores** tapped for plugging.

30 4270/4272/4305/4306/4315/4328/4335/4336/4390/4392/4402/4410/4411 – **GARANT:** All shanks hard turned (for smooth running!).

30 4272/4392 – Special nickel plating.

Application: For clamping tools with Weldon shank to DIN 1835 Form B and DIN 6535 Form HB.

Optional extras: Coolant pipe No. 309880, coolant pipe wrench No. 309890

Note: HSK 40 and 50, Form A and E available ex works by the manufacturer.

Form A | G 2.5 25000 min^{-1}

30 4270

Form A | G 6.3 20000 min^{-1}

30 4277

Optimised cooling concept

- **4** cooling channel bores instead of 2.
- Different approach angles of the cooling channel bores.

Corrosion protection

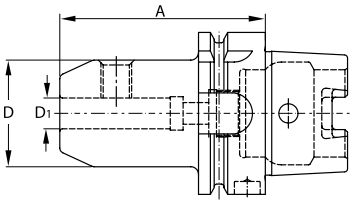
due to special surface treatment.

Form A | G 2.5 25000 min^{-1}

30 4272 / 4392

Form A | G 2.5 25000 min^{-1}

30 4305



Clamping range ∅ D_1			mm	6	8	10	12	14	16	18	20	25	32	40
31A 30 4270	Garant	Side lock arbor	HSK-A 63 short	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
32A 30 4277	HOLEX	Side lock arbor	HSK-A 63 short	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
32A 30 4278	HOLEX	Side lock arbor **with cooling channel bore**	HSK-A 63 short	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	–
31A 30 4272	Garant	Side lock arbor **Nickel-plated, with cooling channel bore**	HSK-A 63 short	XXX	XXX	XXX	XXX	–	XXX	–	XXX	–	–	–
31A 30 4305	Garant	Side lock arbor **with cooling channel bore**	HSK-A 63 short	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	–
31A 30 4306	Garant		HSK-F 63 short	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	–
31A 30 4315	Garant	Side lock arbor	HSK-A 63 A = 120	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	–	–	–
32A 30 4317	HOLEX		HSK-A 63 A = 120	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	–	–	–
31A 30 4328	Garant	Side lock arbor **with cooling channel bore**	HSK-A 63 A = 120	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	–	–	–
31A 30 4335	Garant	Side lock arbor	HSK-A 63 A = 160	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	–
31A 30 4336	Garant	Side lock arbor **with cooling channel bore**	HSK-A 63 A = 160	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	–	–	–
31A 30 4390	Garant	Side lock arbor	HSK-A 100 short	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
32A 30 4397	HOLEX		HSK-A 100 short	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
32A 30 4398	HOLEX	Side lock arbor **with cooling channel bore**	HSK-A 100 short	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	–
31A 30 4392	Garant	Side lock arbor **Nickel-plated, with cooling channel bore**	HSK-A 100 short	XXX	XXX	XXX	XXX	–	XXX	–	XXX	–	–	–
31A 30 4402	Garant	Side lock arbor **with cooling channel bore**	HSK-A 100 short	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	–
31A 30 4410	Garant	Side lock arbor	HSK-A 100 A = 160	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	–
31A 30 4411	Garant	Side lock arbor **with cooling channel bore**	HSK-A 100 A = 160	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	–	–	–
Dimension A (30 4270, 30 4277, 30 4278, 30 4272, 30 4305, 30 4306)			mm	65	65	65	80	80	80	80	80	110	110	125
Dimension A (30 4390, 30 4397, 30 4398, 30 4392, 30 4402)			mm	80	80	80	80	80	100	100	100	100	100	120
∅ D			mm	25	28	35	42	44	48	50	52	65	72	80
Spare clamping screw 309900				6	8	10	12	12	16	16	20	25	32	32

DIN 69893 | ISO 12164-1 | Form A | G 2.5 25000 min^{-1} | ≤3µm | HPC | HSC

Garant Side lock arbors (Weldon) with carbide bushing

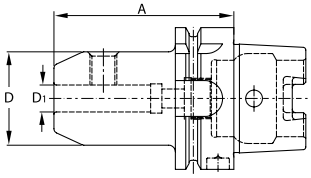
Weldon arbors with precision carbide bush in the clamping bore. All shanks hard turned (for smooth running!). With coolant channel bores that can be plugged, and Balluffchip bore.

Advantage:
- Increased stability of the arbor – no wear in the clamping bore.
- Radial run-out consistency for repetition accuracy.
- Quiet homogeneous machining noise.
- Increased tool life.

Application: For clamping tools with side flats to DIN 1835 B and DIN 6535 HB.

Optional extras: Coolant pipe No. 309880, coolant pipe wrench No. 309890

30 4316



Clamping range ∅ D_1		mm	10	12	16	20
31P 30 4316	Side lock arbors with carbide bushing **incl. cooling channel bores**	HSK-A 63 short	XXX	XXX	XXX	XXX
31P 30 4326		HSK-A 63 A = 120	XXX	XXX	XXX	XXX
31P 30 4406		HSK-A 100 short	XXX	XXX	XXX	XXX
Dimension A (30 4316)		mm	65	80	80	80
Dimension A (30 4406)		mm	80	80	100	100
∅ D		mm	35	42	48	52
Spare clamping screw 309900			10	12	16	20

ISO 12164-1 | DIN 69893 | Form A | G 2.5 25000 min^{-1} | ≤3µm | HSC | HPC

Garant Combi side lock arbors – slim version – ISO 12164 (DIN 69893-1)

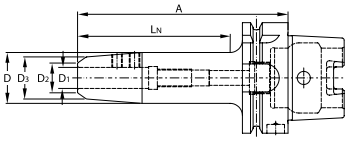
- With **ball-jointed clamping screw for Weldon and Whistle-Notch systems** (clamping flat inclination 2°).
- With Balluffchip bore.
- All shanks hard turned (for smooth running!).
- SK mating faces machined.

Application: For clamping tools with parallel shank to DIN 1835 Form B + E and DIN 6535 Form HB + HE.

Supplied with: Ball-jointed clamping screw and through-drilled back stop screw.

Optional extras: Coolant pipe No. 309880, coolant pipe wrench No. 309890

30 4705



Clamping range ∅ D_1		mm	6	8	10	12	14	16	18	20
31A 30 4705	Combination side lock arbor, slim	HSK-A 63	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
31A 30 4715		HSK-A 63 A = 160	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
Dimension A (30 4705)		mm	100	100	100	120	120	120	120	120
∅ D		mm	24	26	28	29	32	34	36	38
∅ D_2		mm	13	15	16	17	19	21	23	25
∅ D_3		mm	18	20	21	22	24	26	28	30
L_N (30 4705)		mm	67	67	67	87	87	87	89	89
L_N (30 4715)		mm	85	85	85	85	85	85	85	129

ISO 12164-1 | DIN 69882-5 | DIN 69893 | Form A | G 6.3 12000 min^{-1} | ≤3µm | HSC | HPC

Garant Whistle Notch arbors – ISO 12164 (DIN 69893-1)

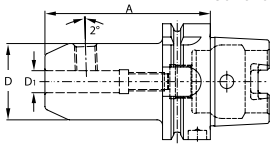
- With back stop screw.
- With Balluffchip bore.

Feature:
The tool is firmly clamped at the side with the clamping screw and supported at the back with the back stop screw. Clamping free of play, giving low vibration running.

Application: For clamping tools with parallel shank and inclined clamping flat (2°) to DIN 1835 E and DIN 6535 HE. Tool can be adjusted axially. Specially for clamping solid carbide drills. The length adjustment due to regrinding the ends of drills can be corrected by axial adjustment backscrew in the toolholder.

Optional extras: Coolant pipe No. 309880, coolant pipe wrench No. 309890

30 4870



Clamping range ∅ D_1		mm	6	8	10	12	14	16	18	20	25	32
31A 30 4870	Whistle Notch arbor	HSK-A 63	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
31A 30 4970		HSK-A 100	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
Dimension A (30 4870)		mm	80	80	80	90	90	100	100	100	110	110
Dimension A (30 4970)		mm	90	90	90	100	100	100	100	110	120	120
∅ D		mm	25	28	35	42	44	48	50	52	65	72
Spare clamping screw 309900			6	8	10	12	12	16	16	20	25	32

DIN 69882-4 | DIN 69893 | ISO 12164-1 | Form A | G 2.5 25000 min^{-1} | ≤3µm | HPC | HSC

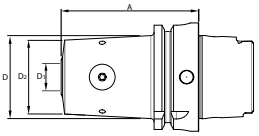
Garant Performance milling chuck – ISO 12164 (DIN 69893-1)

- With Balluffchip bore.
- All shanks hard turned.
- Supplied with 4 cooling channel bores.

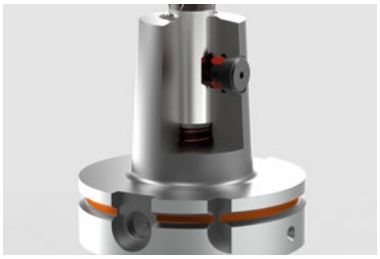
Advantage:
- No risk of the cutter being pulled out, not even a tug.
- Optimised external contour – vibration-damping behaviour.
- Pleasant handling thanks to the differential thread.
- Breakage of the milling cutter shank is improbable.
- Precision version.

Application: For clamping tools with side drive flats to DIN 1835 Form B and DIN 6535 Form HB. Best suited for TPC milling or high feed rate applications. No risk of the cutter being pulled out, more precise radial run-out, **process reliability!**

Optional extras: Coolant pipe No. 309880, coolant pipe wrench No. 309890



30 4450



- *Spring in the base body presses the milling cutter or HB shank into the correct position.*
- *Contact piece on the tightening screw holds the milling cutter in the HB face.*

Clamping ∅ D_1		mm	6	8	10	12	16	20
31A 30 4450	Performance milling chuck **with cooling channel bore**	HSK-A 63 short	XXX	XXX	XXX	XXX	XXX	XXX
31A 30 4460		HSK-A 100 short	XXX	XXX	XXX	XXX	XXX	XXX
Dimension A (30 4450)		mm	65	65	70	80	80	80
Dimension A (30 4460)		mm	80	80	80	85	100	100
∅ D (30 4450)		mm	26.5	29	36.5	43	48.5	52
∅ D (30 4460)		mm	27.5	30	37	43	50	53.5
∅ D_2		mm	22.5	25	32	37.5	43	46.5

DIN 69893 | ISO 12164-1 | Form A | G 2.5 25000 min^{-1} | ≤3µm | HPC | HSC

Garant HiRunER Precision ER collet chuck – ISO 12164 (DIN 69893)

External and internal tapers are ground. All shanks are hard turned for a smooth cutting action. Including Balluffchip bore, high-performance clamping nut up to 25000 rpm.

Advantage:
- **Excellent concentricity in the system** (chuck + collet + clamping nut), 3µm radial run-out with a 2µm collet, 6µm radial run-out with a 5µm collet.
- **Extremely strong holding force** (up to **factor 2** better than the standard ER chuck).
- **Vibration reduction effect** due to 2-part clamping nuts**.**

Application: For clamping tools with plain shank in collets to DIN 6499 - Form A and B.

Supplied with: **Precision clamping nut**.

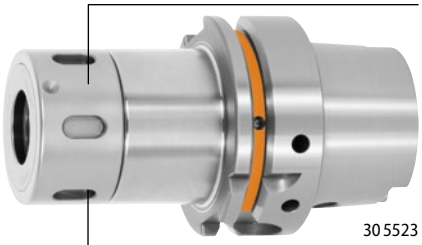
Optional extras: Coolant pipe No. 309880, coolant pipe plug-in socket No. 309890, ER clamping wrenches No. 309748 / 309749 Fahrion ER collets 308901 – 309434.

Note:
- Clamps only nominal ∅ up to shank ∅ tolerance h 10.
- Do not use the clamping nut in combination with a sealing washer.
- Use the precision collet chuck always in conjunction with the precision clamping nut No. 309617; 309618.
- Use in combination with Fahrion collets.

HiRunER
- *collet is fully seated in the chuck*
- *higher clamping forces!*
- *improved radial run-out!*

Standard ER chuck
- *Collet is not inserted 100 % in the chuck.*

Slide-optimised surface treatment

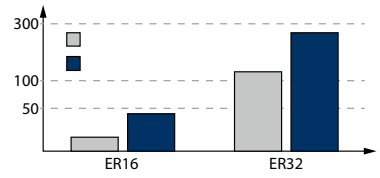


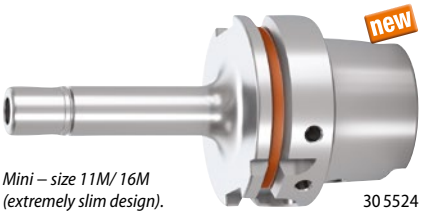
30 5523

Ball-bearing-mounted clamping nut

for higher tightening torques

for ER collets		ER	new 11M	new 16M	16	25	32	40
31A 30 5518	HiRunER precision ER collet chuck	HSK-E 40 short	XXX	XXX	XXX	XXX	–	–
31A 30 5523		HSK-A 63 short	–	–	XXX	XXX	XXX	XXX
31A 30 5524		HSK-A 63 medium	XXX	XXX	XXX	XXX	XXX	XXX
31A 30 5531		HSK-A 100 short	–	–	–	XXX	XXX	XXX
31A 30 5532		HSK-A 100 A = 100	–	–	–	XXX	XXX	XXX
Clamping range		mm	1 – 7	1 – 10	0.5 – 10	1 – 16	2 – 20	3 – 26
Dimension A (30 5518)		mm	70	70	60	65	–	–
Dimension A (30 5523, 30 5531)		mm	–	–	75	75	75	85
Dimension A (30 5524)		mm	100	100	100	100	100	120
∅ D		mm	16	24	34	44	52	62
Spare ER clamping nut 309617			–	–	16	25	32	40
Spare ER clamping nut 309618			11M	16M	–	–	–	–





Mini – size 11M/ 16M (extremely slim design).

30 5524

ER collet chuck and ER set – ISO 12164 (DIN 69893)

ISO 12164-1 | DIN 69882-6 | DIN 69893 | ≤3µm | HSC

- All shanks hard turned (for smooth running!).
- Through bored (without adjustment screw).
- HSK mating faces machined.

305390/305391/305394/305397/305425/305426/305435/305436/305437/305438/305485/305486/305487/305488/305515/ – With Balluffchip bore.

30 5394/5486 – Nickel-plated to prevent corrosion.

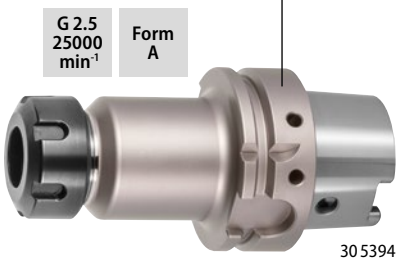
Application: For clamping tools with plain shanks in ER collets to DIN 6499 – Form A and B.

Supplied with: Coated high-speed clamping nut.

Optional extras: Coolant pipe No. 309880, Coolant pipe plug-in socket No. 309890, ER collets No. 308881 – 309434, ER clamping wrenches No. 309680 – 309740.

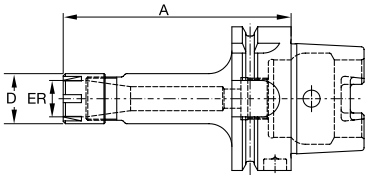
Note:
30 5391/5426/5436 – Without a thread for the coolant pipe.

Corrosion protection
due to special surface treatment.



30 5394

30 5390_16



30 5426_25

30 5397

for ER collets			ER	11	16	20	25	32	40
31A 30 5150	Garant	ER collet chuck	HSK-E 40 short	XXX	XXX	–	XXX	–	–
31A 30 5100	Garant	ER collet chuck	HSK-A 40 A = 80	XXX	XXX	–	XXX	–	–
31A 30 5425	Garant	ER collet chuck	HSK-A 63 ultra short	–	XXX	–	XXX	XXX	XXX
32A 30 5427	HOLEX	ER collet chuck	HSK-A 63 ultra short	–	XXX	–	XXX	XXX	XXX
31A 30 5426	Garant	ER collet chuck	HSK-F 63 ultra short	–	XXX	–	XXX	XXX	XXX
31A 30 5390	Garant	ER collet chuck	HSK-A 63 long	–	XXX	XXX	XXX	XXX	XXX
31A 30 5394	Garant	ER collet chuck **nickel-plated**	HSK-A 63 long	–	XXX	–	XXX	XXX	XXX
32A 30 5397	HOLEX	ER collet chuck	HSK-A 63 long	–	XXX	–	XXX	XXX	XXX
31A 30 5391	Garant	ER collet chuck	HSK-F 63 A = 100	–	XXX	–	XXX	XXX	XXX
31A 30 5437	Garant	ER collet chuck	HSK-A 63 A = 130	–	XXX	–	XXX	XXX	XXX
31A 30 5435	Garant	ER collet chuck	HSK-A 63 A = 160	–	XXX	–	XXX	XXX	XXX
32A 30 5439	HOLEX	ER collet chuck	HSK-A 63 A = 160	–	XXX	–	XXX	XXX	XXX
31A 30 5436	Garant	ER collet chuck	HSK-F 63 A = 160	–	XXX	–	XXX	XXX	XXX
31A 30 5438	Garant	ER collet chuck	HSK-A 63 A = 200	–	XXX	–	XXX	XXX	–
31A 30 5485	Garant	ER collet chuck	HSK-A 100 long	–	XXX	–	XXX	XXX	XXX
31A 30 5486	Garant	ER collet chuck **nickel-plated**	HSK-A 100 long	–	XXX	–	XXX	XXX	XXX
32A 30 5487	HOLEX	ER collet chuck	HSK-A 100 long	–	XXX	–	XXX	XXX	XXX
31A 30 5488	Garant	ER collet chuck	HSK-A 100 A = 130	–	XXX	–	XXX	XXX	XXX
31A 30 5515	Garant	ER collet chuck	HSK-A 100 A = 160	–	XXX	–	XXX	XXX	XXX
32A 30 5517	HOLEX	ER collet chuck	HSK-A 100 A = 160	–	XXX	–	XXX	XXX	XXX
Clamping range			mm	0.5 – 7	0.5 – 10	1 – 13	1 – 16	2 – 20	3 – 26
Dimension A (30 5150)			mm	60	60	–	80	–	–
Dimension A (30 5425, 30 5427)			mm	–	75	–	75	75	85
Dimension A (30 5426)			mm	–	60	–	75	75	75
Dimension A (30 5390, 30 5394, 30 5397, 30 5485, 30 5486, 30 5487)			mm	–	100	100	100	100	120
∅ D			mm	19	28	34	42	50	63

ER collet chuck sets – HSK-A63

Maximum system accuracy

Advantage: Longer working life due to system run-out ≤ 10 µm.

Supplied with: ER chuck **(with nut)** No. 305390, including a plastic case.

Size 16 – ER lock wrench No. 613300 size 25, ER collets No. 308901
ER 16 (426 E): D = 2, 3, 4, 5, 6, 7, 8, 9 and 10 mm.

Size 25 – ER lock wrench No. 628400 size 16/20, ER collet No. 308941
ER 25 (430 E): D = 3, 4, 5, 6, 8, 10, 12, 14 and 16 mm.

Size 32 – ER lock wrench No. 309680 – 32, ER collet No. 308981
ER 32 (470 E): D = 4, 6, 8, 10, 12, 14, 16, 18 and 20 mm.

for ER collets			ER	16	25	32
37D 30 5450	ER collet chuck set		HSK-A 63	XXX	XXX	XXX

ISO 12164-1 | DIN 69893 | Form A | G 2.5 25000 min^{-1} | ≤6µm ER+CP | ≤3µm HP+CP | HSC

FAHRION® PRÄZISION

Precision ER collet chuck CENTRO P (CP) – ISO 12164-1 (DIN 69893-1)

- Ground externally and internally. With Balluffchip bore.
- **Run-out and repetition accuracy 3 µm** at 3×D, maximum 50 mm.
- **Very high clamping forces** due to the collet fully seated in the chuck and coated clamping nut.
- **Vibration damping** due to the element collet and mass of the chuck.
- **Alternatively without seals,** with ER clamping nut CP No. 309655 **or sealed system** with ER clamping nut CP for HP sealing rings No. 309665 in conjunction with HP sealing rings No.309666 – 309668 (for internal coolant supply or as a dirt trap!).

Advantage: Patented optimum seating of the collet, double guides, trapezoidal thread and low-friction coated clamping nut amalgamate when clamped into a sturdy unit, thus ensuring a very high degree of rigidity and precision.

Application: For high precision clamping of tools with plain shank.

Supplied with: **Without clamping nut** and sealing rings.

Optional extras: Precision ER collets for HP No. 309368 – 309381, and for taps No. 309402; 309419 (not Holex). ER clamping nuts CP No. 309655; 309665. HP sealing rings No. 309666 – 309668. CP roller bearing wrenches No. 309754; 309756.

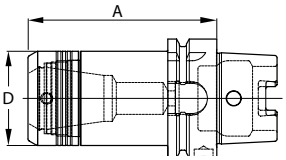
Note:
- CP chuck **clamps only nominal ∅ up to shank ∅ tolerance h10.**
- Use in combination with Fahrion collets.

Please order clamping nut separately!

Mini *– size 11M (extremely slim design!).*

Tapered *– size 16C*

Standard *– sizes 16, 25 and 32*



Mini *– size 16M (extremely slim design!).*

Type CP for ER			11M	16M	16C	16	25	32	40
33F 30 5910	Precision ER collet chuck **CENTRO P**	HSK-A 63 short	–	–	–	XXX	XXX	XXX	XXX
33F 30 5920		HSK-A 63 A = 100	XXX	–	XXX	XXX	XXX	XXX	–
33F 30 5925		HSK-A 63 A = 130	XXX	–	–	XXX	XXX	XXX	–
33F 30 5930		HSK-A 63 A = 160	XXX	–	XXX	XXX	XXX	XXX	–
33F 30 5940		HSK-A 63 A = 200	–	–	–	(XXX)	–	–	–
33F 30 5950		HSK-A 100 A = 100	–	–	–	XXX	XXX	XXX	–
33F 30 5960		HSK-A 100 A = 160	–	–	–	(XXX)	(XXX)	(XXX)	–
33F 30 8423		HSK-E 25 A = 45	–	XXX	–	–	–	–	–
33F 30 8432		HSK-E 32 A = 55	–	XXX	–	–	–	–	–
33F 30 8436		HSK-E 40 A = 55	–	XXX	–	–	–	–	–
33F 30 8444		HSK-E 50 A = 100	–	XXX	–	–	–	–	–
Clamping range		mm	1 – 7	1 – 10	1 – 10	1 – 10	2 – 16	2 – 20	3 – 26
Dimension A (30 5910)		mm	–	–	–	55	60	70	80
∅ D		mm	16	22	24	30	40	50	63

ISO 12164-1 | DIN 69893 | ≤8µm | HSC

Garant

Reducing adapters for tools with MT shank – ISO 12164 (DIN 69893)

- Precision ground internal and external taper.
- With Balluffchip bore.
- Shanks hard turned (for smooth running).
- HSK mating faces machined.

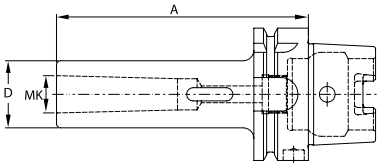
Optional extras: Coolant pipe No. 309880, coolant pipe wrench No. 309890

Form A | G 6.3 8000 min^{-1}

30 6750

Form F | G 2.5 25000 min^{-1}

30 6935



MT internal			1	2	3	4
31A 30 6750	MT reducing adapter **for locking threads**	HSK-A 63	XXX	XXX	XXX	XXX
31A 30 6930	MT reducing adapter **with tang**	HSK-A 63	XXX	XXX	XXX	XXX
31A 30 6935		HSK-F 63	XXX	XXX	XXX	XXX
31A 30 6970		HSK-A 100	XXX	XXX	XXX	XXX
Dimension A (30 6750, 30 6930, 30 6935)		mm	100	120	140	160
Dimension A (30 6790, 30 6970)		mm	110	120	150	170
∅ D		mm	25	32	40	48

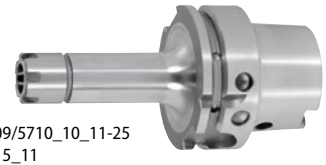
DIN 69893 | ISO 12164-1 | Form A | G 2.5 25000 min^{-1} | ≤3µm | HSC

GARANT ER collet chuck with mini nut, slim version – ISO 12164-1 (DIN 69893-1)

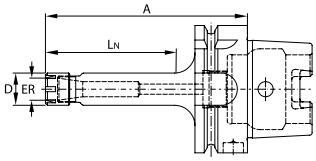
- All shanks hard turned (for smooth running!).
- With Balluffchip bore.
- Bored open (= ER11).
- HSK mating faces machined.

Supplied with: High Speed ER mini nut, precision balanced (G2.5 / 25,000 rpm).

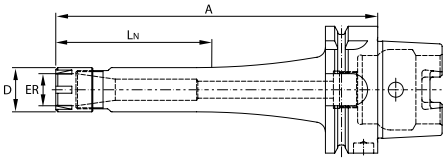
Optional extras: Coolant tube No. 309880,
Coolant tube socket wrench No. 309890,
ER collets No. 308881 – 309430,
ER mini clamping wrench No. 309740.



30 5709/5710_10_11-25
30 5715_11



30 5715_16-25



for ER collets			ER	11	16	20	25
31A 30 5709	ER collet chuck Mini		HSK-A 63 A = 70	XXX	XXX	–	–
31A 30 5710			HSK-A 63 A = 100	XXX	XXX	XXX	XXX
31A 30 5712			HSK-A 63 A = 130	XXX	XXX	XXX	XXX
31A 30 5715			HSK-A 63 A = 160	XXX	XXX	XXX	XXX
31A 30 5721			HSK-A 100 A = 100	XXX	XXX	–	XXX
31A 30 5723			HSK-A 100 A = 160	XXX	XXX	–	XXX
Ø D			mm	16	22	28	35
L_N (30 5709)			mm	34	33	–	–
L_N (30 5710)			mm	64	64	66	67
L_N (30 5712)			mm	94	94	96	97
L_N (30 5715)			mm	124	70	84	84
L_N (30 5721)			mm	51	51	–	56
L_N (30 5723)			mm	111	70	–	85
Spare ER mini nut 309650				11	16	20	25

ISO 12164-1 | DIN 69893 | Form A | G 2.5 25000 min^{-1} | ≤5µm | HSC

Collet chuck, extra slim – ISO 12164 (DIN 69893-1)

- HSK mating faces machined.
- Shanks hard turned.
- With Balluffchip bore.
- The collet is clamped by a threaded connection from behind **through** the chuck, **no clamping nut required.**

Advantage: Extremely slim design permits machining of components where access is difficult, e.g. for toolmaking and mould-making.

30 4981/4982 – Large working range and optimised contour for reduced vibration. Cooling with the collet by the tool or along the shank.

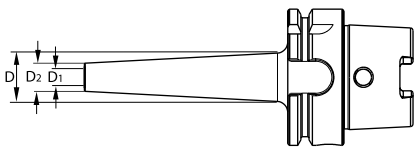
Application: For clamping tools with plain shank to DIN 6499.

Supplied with: Clamping screw and wrench with T-handle.

Optional extras: Plug-in socket No. 309890, **GARANT collets No. 309563.**

30 4981/4982 – **ALBRECHT collets No. 309572 and 309573.**

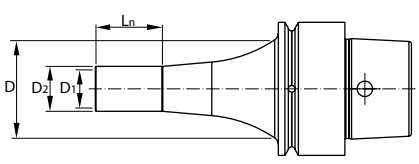
30 4972



Clamping range				mm	2-6	
31A 30 4972		Collet chuck, extra slim	HSK-A 63 A = 120		XXX	
31A 30 4973	GARANT	Collet chuck, extra slim, with through-coolant	HSK-A 63 A = 120		XXX	new
31A 30 4974		Collet chuck, extra slim	HSK-A 63 A = 160		XXX	
31A 30 4976		Collet chuck, extra slim, with through-coolant	HSK-A 63 A = 160		XXX	new
Ø D_1				mm	9.6	
Ø D_2				mm	13	
Ø D				mm	27	

Clamping range				mm	1-6	
34F 30 4982	ALBRECHT Präzisions Spannfutter	Collet chuck, extra slim with internal cooling	HSK-A 63 A = 160		XXX	new
34F 30 4981			HSK-E 40 A = 75		XXX	new
Ø D_1				mm	10.1	
Ø D_2				mm	13.5	
Ø D (30 4982)				mm	15.2	
Ø D (30 4981)				mm	16.1	
L_N (30 4982)				mm	30	
L_N (30 4981)				mm	35	

30 4982_1-6



ISO 12164-1 | DIN 69893 | Form A | G 6.3 15000 min^{-1} | ≤5µm | HPC

Heavy-duty chuck – ISO 12164-1 (DIN 69893-1)

- Low friction due to needle bearings.
- Protected with anti-corrosion coating.
- Dust-tight and watertight.
- Very high clamping force prolongs tool life and improves surface quality.

30 5539 – **Clamping force up to 150 Nm at Ø 12, 300 Nm at Ø 16 and 400 Nm at Ø 20.**

30 5525/5528 – ■ **Clamping force up to 900 Nm.**

30 5535/5538 – ■ **Clamping force up to 1000 Nm at Ø 20, 4000 Nm at Ø 32.**

- Centred tool clamping with optimum concentricity.
- **Internal coolant feed.**

Advantage:

30 5539 – Low interference contour due to slim design.

30 5535/5538 – Long tool life. Vibration damping properties. High stability due to strengthened clamping nut.

Application: For clamping tools with plain shanks.

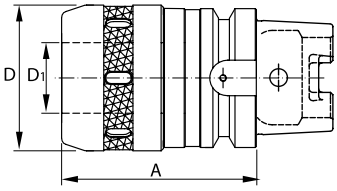
Supplied with: Clamping nut

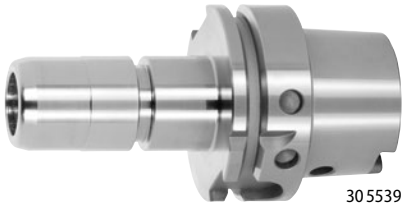
Optional extras: Coolant tube No. 309880, collets No. 309566 – 309570 and No. 309575 – 309576, wrench No. 309747 for No. 305539.

30 5535

30 5525

Ø D_1		mm	12	16	20	32
33K 30 5535	NT TOOL Heavy-duty chuck	HSK-A 63	–	–	XXX	XXX
33K 30 5538		HSK-A 100	–	–	(XXX)	XXX
32A 30 5525		HSK-A 63	–	–	XXX	XXX
32A 30 5528	HOLEX	HSK-A 100	–	–	XXX	XXX
32A 30 5539	Heavy-duty chuck **slim**	HSK-A 63	XXX	XXX	XXX	–
Dimension A (30 5535, 30 5538)		mm	–	–	105	105
Dimension A (30 5525, 30 5539)		mm	90	90	90	135
Dimension A (30 5528)		mm	–	–	100	135
Ø D (30 5535, 30 5538)		mm	–	–	52	73
Ø D (30 5525, 30 5528)		mm	–	–	52	66
Ø D (30 5539)		mm	30	38	44	–
suitable hook spanner 628400 (30 5535, 30 5538, 30 5525, 30 5528)			–	–	52 / 55	68 / 75
suitable tightening wrench 309747 (30 5539)			S10	S16	S20	–





30 5539

DIN 69893 | ISO 12164-1 | Form A | G 2.5 25000 min^{-1} | ≤5µm | HPC

Heavy-duty chuck with security function – ISO 12164-1 (DIN 69893-1)

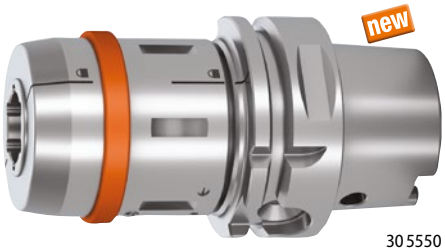
- Shanks hard turned (smooth cutting action).
- Very high clamping force prolongs tool life and improves surface quality.
- Centred tool clamping with optimum concentricity.
- Integral length adjustment screw.
- Internal coolant feed.

Advantage: HB (Weldon) flat provides quick and easy protection against the milling cutter pulling out. Positive connection between the milling cutter and arbor. Compact vibration-optimised contour.

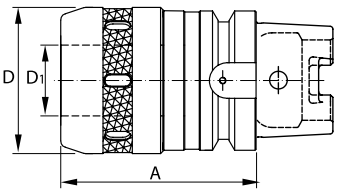
Application: For clamping tools with parallel shank and HB flat. Ideally suited for heavy-duty machining (HPC, TPC).

Supplied with: Clamping nut.

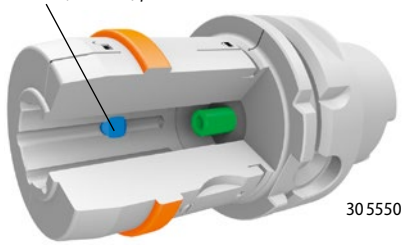
Optional extras: Coolant tube No. 309880.



30 5550



Pressure (retention) piece.



30 5550

Ø D_1		mm	12	16	20
31A 30 5550	Heavy-duty chuck **with security function**	HSK-A 63	XXX	XXX	XXX
31A 30 5560		HSK-A 100	XXX	XXX	XXX
Dimension A (30 5550)		mm	80	83	86
Dimension A (30 5560)		mm	99	102	105
Ø D		mm	40	45	50
Clamping force up to		N·m	430	520	900
suitable hook spanner 628400			40/42	45/50	45/50

ISO 12164-1 | DIN 69882-3 | DIN 69893 | ≤6µm | HPC

Combination face mill adapters – cutter heads – ISO 12164 (DIN 69893)

Optional extras: Coolant pipe No. 309880, plug-in socket No. 309890, special toggle spanner No. 309840.

Combination face mill adapters HSK

G 2.5 25000 min^{-1}

With Balluffchip bore. HSK mating faces machined.

Application: For clamping shell end mills and milling cutter heads with longitudinal or transverse groove.

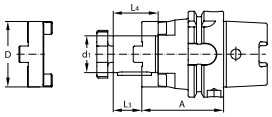
Supplied with: Drive key, face mill drive ring, and lock screw.

Form A

306110

Form F

306121



Spigot ∅ d_1		mm	16	22	27	32	40
31A 30 6110	Garant Combination face mill adapter	HSK-A 63 short	XXX	XXX	XXX	XXX	XXX
31A 30 6121		HSK-F 63 short	XXX	XXX	XXX	XXX	XXX
31A 30 6130		HSK-A 63 A = 100	XXX	XXX	XXX	XXX	–
31A 30 6170		HSK-A 63 A = 160	XXX	XXX	XXX	XXX	XXX
31A 30 6270		HSK-A 100 A = 100	XXX	XXX	XXX	XXX	XXX
31A 30 6290		HSK-A 100 A = 160	XXX	XXX	XXX	XXX	XXX
Dimension A (30 6110)		mm	60	60	60	60	70
Dimension A (30 6121)		mm	60	60	60	65	70
∅ D		mm	32	40	48	58	70
L_3		mm	17	19	21	24	27
L_4		mm	27	31	33	38	41
Spare milling cutter lock screw 309860			16	22	27	32	40
Spare face mill drive ring 309870			16	22	27	32	40
suitable special toggle spanner 309840			16	22	27	32	40

Face mill arbor HSK

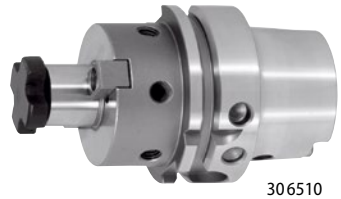
- Spigot ∅ 40 with 4 tapped holes for face mills to DIN 2079.
- With Balluffchip bore.
- Increased collar contact surface.
- HSK mating faces machined.

30 6541/6530/6537/6531 – With **cooling channel bores.**

Application: For clamping shell end mills and milling cutter heads.

Supplied with: Lock screw

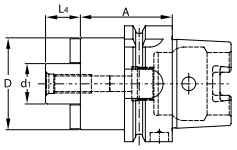
G 2.5 25000 min^{-1}



306510

G 6.3 20000 min^{-1}

306537



Spigot ∅ d_1		mm	16	22	27	32	40
31A 30 6510	Garant Face mill arbor	HSK-A 63 short	XXX	XXX	XXX	XXX	XXX
31A 30 6530	Garant Face mill arbor with cooling channel bore	HSK-A 63 short	XXX	XXX	XXX	XXX	XXX
32A 30 6537	HOLEX Face mill arbor with cooling channel bore	HSK-A 63 short	XXX	XXX	XXX	XXX	XXX
31A 30 6531	Garant Face mill arbor with cooling channel bore	HSK-F 63 short	XXX	XXX	XXX	XXX	XXX
31A 30 6541	Garant Face mill arbor with cooling channel bore	HSK-A 63 medium	XXX	XXX	XXX	XXX	XXX
Dimension A (30 6510, 30 6530, 30 6537)		mm	50	50	60	60	60
Dimension A (30 6531)		mm	45	50	55	60	65
Dimension A (30 6541)		mm	75	75	80	80	80
∅ D (30 6510, 30 6530)		mm	38	48	60	78	88
∅ D (30 6537)		mm	35	50	60	78	88
∅ D (30 6531)		mm	38	48	58	78	88
∅ D (30 6541)		mm	38	48	60	78	89
L_4		mm	17	19	21	24	27
Spare milling cutter lock screw 309860			16	22	27	32	40
suitable special toggle spanner 309840			16	22	27	32	40

ISO 12164-1 | DIN 69882-3 | DIN 69893 | ≤6µm | HPC

Face mill arbor – ISO 12164 (DIN 69893)

- Spigot ∅ 40 with 4 tapped holes for face mills to DIN 2079.
- With Balluffchip bore.
- Increased collar contact surface.
- HSK mating faces machined.

30 6562–6566/6575/6675/6677/6684/6686/6687/6691 – With **cooling channel bores.**

Application: For clamping shell end mills and milling cutter heads.

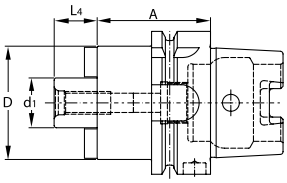
Supplied with: Lock screw.

Optional extras: Coolant tube No. 309880, socket wrench for coolant tubes No. 309890, toggle spanner No. 309840.

Form A

G 2.5
25000 min^{-1}

30 6550



Spigot ∅ d_1				mm	16	22	27	32	40	50	60
31A	30 6550		Face mill arbor	HSK-A 63 A = 100	XXX	XXX	XXX	XXX	–	–	–
31A	30 6562			HSK-A 63 A = 100	XXX	XXX	XXX	XXX	XXX	–	–
31A	30 6563		Face mill arbor with cooling channel bore	HSK-F 63 A = 100	XXX	XXX	XXX	XXX	XXX	–	–
31A	30 6566	Garant		HSK-A 63 A = 130	XXX	XXX	XXX	XXX	XXX	–	–
31A	30 6570		Face mill arbor	HSK-A 63 A = 160	XXX	XXX	XXX	XXX	–	–	–
31A	30 6575			HSK-A 63 A = 160	XXX	XXX	XXX	XXX	–	–	–
31A	30 6675		Face mill arbor with cooling channel bore	HSK-A 100 short	XXX	XXX	XXX	XXX	XXX	XXX	XXX
32A	30 6677	HOLEX		HSK-A 100 short	XXX	XXX	XXX	XXX	XXX	XXX	–
31A	30 6678	Garant	Face mill arbor	HSK-A 100 A = 100	XXX	XXX	XXX	XXX	XXX	XXX	–
32A	30 6687	HOLEX		HSK-A 100 A = 100	XXX	XXX	XXX	XXX	XXX	–	–
31A	30 6684		Face mill arbor with cooling channel bore	HSK-A 100 A = 100	XXX	XXX	XXX	XXX	XXX	–	–
31A	30 6686			HSK-A 100 A = 130	XXX	XXX	XXX	XXX	XXX	–	–
31A	30 6690	Garant	Face mill arbor	HSK-A 100 A = 160	XXX	XXX	XXX	XXX	XXX	–	–
new 31A	30 6691		Face mill arbor with cooling channel bore	HSK-A 100 A = 160	XXX	XXX	XXX	XXX	XXX	–	–
Dimension A (30 6675, 30 6677)				mm	50	50	50	50	60	70	70
∅ D (30 6550, 30 6562, 30 6566, 30 6570, 30 6575, 30 6675, 30 6678, 30 6684, 30 6686, 30 6690, 30 6691)				mm	38	48	60	78	89	120	140
∅ D (30 6563)				mm	38	48	58	78	88	–	–
∅ D (30 6677, 30 6687)				mm	38	50	60	78	89	120	–
L_4				mm	17	19	21	24	27	30	40
Spare milling cutter lock screw 309860					16	22	27	32	40	50	60
suitable special toggle spanner 309840					16	22	27	32	40	50	60

RÖHM Lubritool® lubrication device for HSK machine headstocks

For regular lubrication and maintenance of clamping systems in the machine spindle of HSK machines. Automatic and fast lubrication of the HSK clamping set by inserting the lubrication device from the magazine into the machine spindle.

Suitable for: Machine tools with HSK clamping sets – form A, form T, form E.

Advantage:
- The right lubricant, at the right time, in the right quantity.
- No manual lubrication necessary – and you never have to remember.
- Reduced maintenance time (just 5 seconds).
- Compact design.

Application: HSK tool clamping systems should be maintained **regularly and as instructed by the manufacturer.** One cartridge provides approx. 50 lubrication cycles.

Note: Grease cartridge not included in scope of delivery.

Available exclusively in the following countries: DE, AT, CH, GB, NL, IT, ES, PT, FR, BE, DK, FI, SE, PL, CZ, SK, HU.

Lubrication pulse when inserted or exchanged.

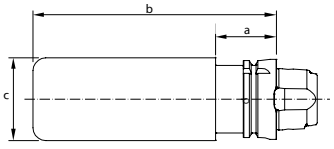
304211

304210

Size		HSK	63	100
30W	30 4210	Lubritool® lubrication device	–	–
a		mm	48	51
b		mm	191.5	194
c		mm	65	
Net weight		kg	1.6	2.7

Suitable for: Lubrication device No. 304210.

number		1
30W	30 4211	Grease cartridge	XXX

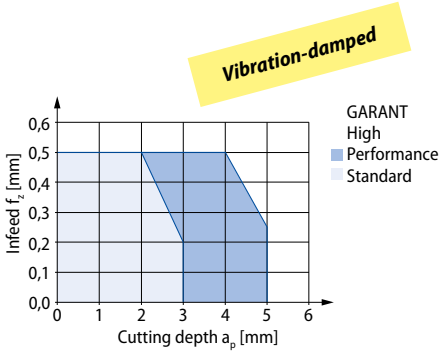


DIN 6357 | DIN 69882-3 | DIN 69893 | ISO 12164-1 | Form A | HPC

Milling head arbors, vibration damped

- Shank, spigot, and all contact surfaces are ground at the collar.
- With Balluffchip bore.
- Increased collar contact surface.

Supplied with: Cutter lock screw and drive dog.



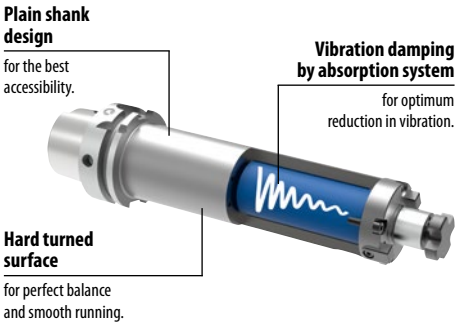
High-performance version with embedded heavy metal core

≤5µm

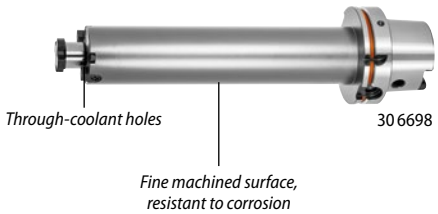
Advantage: The heavy metal core specially matched to the arbors gives optimum machining results even with long overhangs:
- Saves time, because allows use of the maximum machining parameters.
- Smooth running and thus perfect surface quality results.
- Saves costs, because tool life is increased.
- Less vibrational stress on the machine headstock.

Optional extras: Special coolant pipe wrench No. 309840, coolant pipe No. 309880.

Note: Balance quality G 6.3 dependent on the maximum operating speed.



Spigot ∅ d_1		mm	16	22	27
31H 30 6692	High-Performance face mill arbor **vibration-damped, cylindrical, with cooling channel bores**	HSK-A 63 A = 200	XXX	XXX	–
31H 30 6693		HSK-A 63 A = 300	XXX	XXX	–
31H 30 6697		HSK-A 100 A = 200	XXX	XXX	XXX
31H 30 6698		HSK-A 100 A = 300	XXX	XXX	XXX
∅ D		mm	38	48	58
L_4		mm	17	19	21
n_{max} (30 6692, 30 6697)		rpm		8000	
n_{max} (30 6693)		rpm	5000	5500	–
n_{max} (30 6698)		rpm	5800	6000	6000



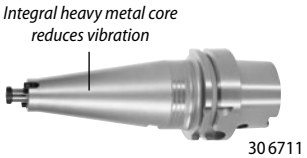
With heavy metal core

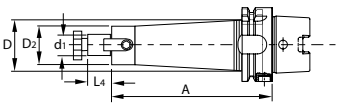
G 6,3 8000 min⁻¹ | ≤6µm

Vibration damped version, arbor with vibration-damping core.

Advantage: Significantly lower tendency to vibrate. Considerable increase in feed rate.

Optional extras: Special coolant pipe wrench No. 309840, coolant pipe No. 309880.





Spigot ∅ d_1		mm	16	22	27	32	40
31A 30 6703	Face mill arbor **vibration-damped, conical**	HSK-A 63 A = 200	XXX	XXX	XXX	–	–
31A 30 6705	Face mill arbor **vibration-damped, cylindrical**	HSK-A 63 A = 200	XXX	XXX	XXX	–	–
31A 30 6712	Face mill arbor **vibration-damped, cylindrical, with cooling channel bore**	HSK-A 63 A = 200	XXX	XXX	–	–	–
31A 30 6706	Face mill arbor **vibration-damped, cylindrical**	HSK-A 63 A = 300	XXX	XXX	XXX	–	–
31A 30 6713	Face mill arbor **vibration-damped, cylindrical, with cooling channel bore**	HSK-A 63 A = 300	XXX	XXX	XXX	–	–
31A 30 6708	Face mill arbor **vibration-damped, cylindrical**	HSK-A 100 A = 200	XXX	XXX	XXX	–	–
31A 30 6714	Face mill arbor **vibration-damped, cylindrical, with cooling channel bore**	HSK-A 100 A = 200	XXX	XXX	XXX	–	–
31A 30 6709	Face mill arbor **vibration-damped, cylindrical**	HSK-A 100 A = 300	XXX	XXX	XXX	XXX	XXX
31A 30 6715	Face mill arbor **vibration-damped, cylindrical, with cooling channel bore**	HSK-A 100 A = 300	XXX	XXX	XXX	XXX	–
31A 30 6710	Face mill arbor **vibration-damped, conical**	HSK-A 100 A = 200	XXX	XXX	XXX	–	–
31A 30 6711		HSK-A 100 A = 300	XXX	XXX	XXX	XXX	–
∅ D (30 6703)		mm	50	50	50	–	–
∅ D (30 6710, 30 6711)		mm	80	80	80	80	–
∅ D_2		mm	38	48	58	78	89
L_4		mm	17	19	21	24	27

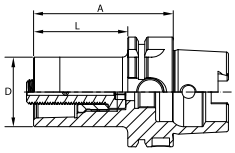
ISO 12164-1 | DIN 69893 | ISO 26623-1 | Form A | G 6.3 8000 min^{-1} | ≤3µm

Garant Reducing adapter for tools with PSC shank – ISO 12164 (DIN 69893)

Ground internally and externally. The internal thread provided for the coolant tube in the PSC toolholder is plugged with the socket-head screw incorporated in the adapter. The clamping screw incorporates a through hole, so the system is suitable for through-coolant feed. With Balluffchip bore.

Suitable for: Tool arbor with **polygonal shank (PSC) – ISO 26623-1.**
Application: For adaption from HSK-A to PSC.
Optional extras: Coolant pipe No. 309880, plug-in socket No. 309890.

30 6975



PSC inner			4	5	6	8
31Z 30 6975	Reducing adapter for PSC shank	HSK-A 63	XXX	XXX	–	–
31Z 30 6976		HSK-A 100	–	–	XXX	XXX
Dimension A		mm	80	90	110	120
∅ D		mm	40	50	63	80
L_1		mm	54	64	81	91

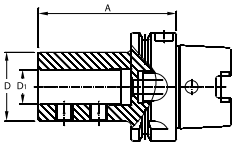
ISO 12164-1 | DIN 69893 | Form A | G 2.5 25000 min^{-1} | HPC

Garant Toolholder for indexable drill – ISO 12164-1 (DIN 69893-1)

Position of the threaded pin for countersinking in the indexable drill offset by 0.4 mm. **Tightening the lock screw clamps the indexable drill collar against the front face of the holder. In addition the contact face ∅ is larger** than for conventional toolholders.

Suitable for: All indexable drills with parallel shank to DIN 6595, Part 1.
Application: **For mounting all standard indexable drills to DIN 6595, Part 1.**
Optional extras: Coolant pipe No. 309880, coolant pipe wrench No. 309890

30 7005



for shank ∅ D_1		mm	20	25	32	40
31A 30 7005	Toolholder for indexable drills	HSK-A 63	XXX	XXX	XXX	XXX
31A 30 7007		HSK-A 100	XXX	XXX	XXX	XXX
Dimension A (30 7005)		mm	80	90	90	105
Dimension A (30 7007)		mm	90	95	100	110
∅ D		mm	40	45	52	60

ISO 12164-1 | DIN 69893

Boring bar blanks, making special tools, ISO 12164 (DIN 69893)

- Taper and collar hardened and ground.
- Shank soft for further machining.

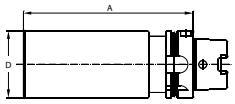
Material: 16MnCr5.
Application: For making special tools.
Optional extras: Coolant pipe No. 309880, coolant pipe wrench No. 309890

Form A

30 7025

Form F

30 7022



A dimension			mm	160	200	250
31A 30 7022	Garant	Boring bar blank	HSK-F 63	–	XXX	–
32A 30 7025	HOLEX		HSK-A 63	XXX	–	–
32A 30 7027	HOLEX		HSK-A 100	–	–	XXX
∅ D			mm	63	63	97

ISO 12164-1 | DIN 69893 | ≤3µm

Garant Checking mandrel – ISO 12164 (DIN 69893)

Application: For accepting tool machines to ISO recommendation R 230.
Supplied with: Wooden box and test certificate.

Form A

30 7012

Form F

30 7016

A dimension			mm	300	∅ D mm
31A 30 7012	Checking mandrel		HSK-A 63	XXX	40
31A 30 7014			HSK-A 100	XXX	50
31A 30 7016			HSK-F 63	XXX	40

ISO 12164-1 | DIN 69893 | Form A | G 2.5 25000 min^{-1} | ≤3µm | HSC

Garant Arbor – for threaded copy mills – ISO 12164-1 (DIN 69893-1)

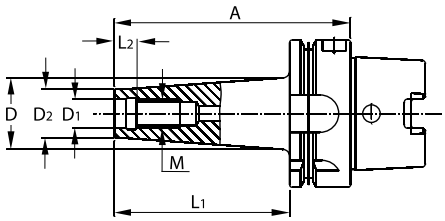
With Balluffchip bore.
30 7042 – Plain design.
30 7044/7046 – Tapered design.

Application: To take screw-in milling cutters with thread.

Optional extras: Extensions No. 301358, reducers No. 301359, coolant pipe No. 309880, socket for coolant pipe No. 309890.

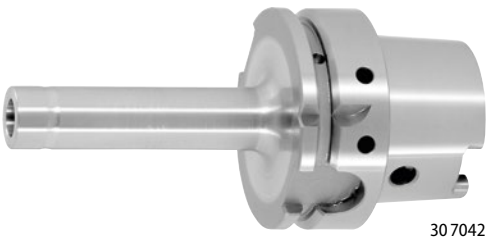
Note: Densimet arbors and solid carbide extensions for threaded copy milling cutters, see No. 301343 – 1356 and No. 301361 – 1368.

30 7044

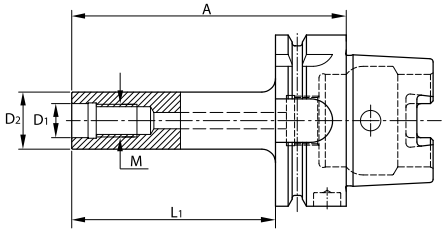


Thread M × Length L_1	31A 30 7044	31A 30 7046	Dimension A		Ø D_1	Ø D_2	Ø D	L_1	L_2	
	Arbor for screw-in milling cutters with thread, tapered form									
	HSK-A 63	HSK-A 100	30 7044 mm	30 7046 mm	mm	mm	mm	mm	30 7044 mm	30 7046 mm
M5×25	XXX	–	51	–	5.5	10	13	25	5	–
M6×25	XXX	–	51	–	6.5	10	13	25	5	–
M8×25	XXX	–	51	–	8.5	13	15	25	5	–
M8×50	XXX	XXX	76	79	8.5	13	23	50	5	5
M8×75	XXX	–	101	–	8.5	13	23	75	5	–
M10×25	XXX	–	51	–	10.5	18	20	25	5	–
M10×50	XXX	XXX	76	79	10.5	18	23	50	5	5
M10×75	XXX	–	101	–	10.5	18	23	75	5	–
M10×100	XXX	XXX	126	129	10.5	18	32	100	5	10
M10×150	XXX	XXX	176	179	10.5	18	36.5	150	5	10
M12×25	XXX	–	51	–	12.5	21	24	25	5	–
M12×50	XXX	XXX	76	79	12.5	21	24	50	5	5
M12×75	XXX	–	101	–	12.5	21	31	75	5	–
M12×100	XXX	XXX	126	129	12.5	21	33	100	5	10
M12×150	XXX	XXX	176	179	12.5	21	40	150	5	10
M16×25	XXX	–	51	–	17	29	29	25	5	–
M16×50	XXX	XXX	76	79	17	29	34	50	5	5
M16×75	XXX	–	101	–	17	29	34	75	5	–
M16×100	XXX	XXX	126	129	17	29	36	100	5	10
M16×150	XXX	XXX	176	179	17	29	42.5	150	5	10

Thread M × Length L_1	31A 30 7042	Dimension A	Ø D_1	Ø D_2	L_1	L_2
	Arbor for screw-in milling cutters with thread, cylindrical form					
	HSK-A 63	mm	mm	mm	mm	mm
M5×25	XXX	51	5.5	10	25	5
M6×25	XXX	51	6.5	10	25	5
M8×25	XXX	51	8.5	13	25	5
M8×50	XXX	76	8.5	13	50	5
M8×75	XXX	101	8.5	13	75	5
M8×100	XXX	126	8.5	13	100	5
M10×25	XXX	51	10.5	18	25	5
M10×50	XXX	76	10.5	18	50	5
M10×100	XXX	126	10.5	18	100	5
M10×125	XXX	151	10.5	18	125	5
M10×150	XXX	176	10.5	18	150	5
M12×25	XXX	51	12.5	21	25	5
M12×50	XXX	76	12.5	21	50	5
M12×75	XXX	101	12.5	21	75	5
M12×100	XXX	126	12.5	21	100	5
M12×125	XXX	151	12.5	21	125	5
M12×150	XXX	176	12.5	21	150	5
M16×25	XXX	51	17	29	25	5
M16×50	XXX	76	17	29	50	5
M16×75	XXX	101	17	29	75	5
M16×100	XXX	126	17	29	100	5
M16×150	XXX	176	17	29	150	5



30 7042



DIN 69893 | ISO 12164-1 | Form A | G 2.5 25000 min^{-1} | ≤3µm | HSC

Garant – Arbor – for threaded copy mills – ISO 12164-1 (DIN 69893-1)

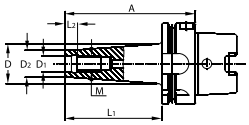
With Balluffchip bore. Tapered design.
Vibration damped version, arbor with vibration-damping core.

Application: To take screw-in milling cutters with thread.

Optional extras: Extensions No. 301342, reducers No. 301344, coolant tube No. 309880, coolant tube socket wrench No. 309890.

Note: Densimet arbors and solid carbide extensions for threaded copy milling cutters, see No. 301373 – 1379 and No. 301361 – 1368.

30 7037



Thread M×length L_1	31A 30 7037	31A 30 7038	31A 30 7043	Dimension A	Ø D_1	Ø D_2	Ø D	L_1	L_2
	Arbor for screw-in milling cutters with thread vibration-damped, conical shape								
	HSK-A 63	HSK-A 63	HSK-A 100	mm	mm	mm	mm	mm	mm
M8×75	XXX	–	–	101	8.5	13	23	75	5
M8×100	XXX	–	–	126	8.5	13	23	100	5
M10×100	XXX	–	–	126	10.5	18	32	100	5
M10×150	XXX	–	–	176	10.5	18	36.5	150	5
M12×100	XXX	–	–	126	12.5	21	33	100	5
M12×150	XXX	–	–	176	12.5	21	40	150	5
M16×150	XXX	–	–	176	17	29	42.5	150	5
M16×200	XXX	–	–	226	17	29	45	200	5
M10×174	–	XXX	–	200	10.5	18	40	174	5
M10×224	–	XXX	–	250	10.5	18	40	224	5
M12×174	–	XXX	–	200	12.5	21	40	174	5
M12×224	–	XXX	–	250	12.5	21	40	224	5
M16×224	–	XXX	–	250	17	29	40	224	5
M12×274	–	–	XXX	300	12.5	21	42.5	274	5
M16×274	–	–	XXX	300	17	29	42.5	274	5

ISO 12164-1 | DIN 69893 | DIN 69882-7 | ≤80 bar | G 2.5 25000 min^{-1} | ≤3µm | HSC

Hydraulic chuck (HD chuck) – ISO 12164 (DIN 69893)

- Axial length adjustment, adjustment travel 10 mm.
- With Balluffchip bore.
  30 7514 – With radial adjustment for tool length.

Application:
- For drilling, reaming, and milling.
- High metal removal rate (but not for extreme heavy machining).

Optional extras: Reducer sleeves No. 302135 – 302180, coolant tube No. 309880, coolant tube socket wrench No. 309890, parallel wipers No. 343720.

30 7505/7508/7514/7518/7522/7525 – WTE stop screws for direct clamping and for use of reducing sleeves on request.

Note: A-dimension = 200 mm available on request!

Form A

30 7507

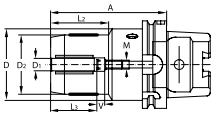
Form A

30 7512

Form F

30 7522

Clamping range Ø D_1			mm	6	8	10	12	16	20	32	25
33W 30 7505	WTE	HD chuck **short, heavy**	HSK-A 63 A = 80	–	–	–	–	–	XXX	–	–
new 32A 30 7507	HOLEX	HD chuck **short, slim**	HSK-A 63	XXX	XXX	XXX	XXX	XXX	XXX	–	–
33W 30 7508	WTE		HSK-A 63	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
31A 30 7512	Garant		HSK-A 63	XXX	XXX	XXX	XXX	XXX	XXX	–	–
33W 30 7514		HD chuck **radial adjustment**	HSK-A 63	(XXX)	(XXX)	(XXX)	(XXX)	(XXX)	(XXX)	–	(XXX)
33W 30 7518	WTE	HD chuck **short, slim**	HSK-F 63	(XXX)	(XXX)	(XXX)	(XXX)	(XXX)	(XXX)	–	(XXX)
33W 30 7522		HD chuck **long, slim**	HSK-A 63 A = 150	XXX	(XXX)	XXX	XXX	(XXX)	XXX	–	–
Dimension A (30 7507, 30 7508, 30 7512, 30 7518)			mm	70	70	80	85	90	90	125	120
Dimension A (30 7514)			mm	80	80	85	90	95	100	–	120
Ø D_2 (30 7505)			mm	–	–	–	–	–	33	–	–
Ø D_2 (30 7507, 30 7508, 30 7512, 30 7518, 30 7522)			mm	26	28	30	32	38	42	63	57
Ø D (30 7505)			mm	–	–	–	–	–	51.5	–	–
Ø D (30 7507, 30 7508, 30 7512, 30 7514, 30 7518, 30 7522)			mm	50	50	50	50	50	50	59	53
L_2 (30 7522)			mm	105	105	105	105	105	105	–	–
L_3 (30 7507, 30 7508, 30 7512, 30 7518)			mm	24	24	32	40	45	48	60	62
V			mm	10							
M (30 7507, 30 7508, 30 7512, 30 7518)				M5	M6	M8×1	M10×1	M12×1	M16×1	M16×1	M16×1
M (30 7522)				M5	M5	M6	M6	M8×1	M8×1	–	–
suitable reducing adapter				–	–	–	302135 / 2140	–	302155 / 2160	302175 / 2180	–



Clamping range ∅ D_1		mm	6	8	10	12	16	20	25	32
33W 30 7525	WTE	HSK-A 100	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
new 32A 30 7517	HOLEX	HSK-A 100	XXX	XXX	XXX	XXX	XXX	XXX	–	–
Dimension A		mm	75	75	90	95	100	105	110	110
∅ D_2		mm	26	28	30	32	38	42	57	63
∅ D		mm	50	50	50	50	50	50	63	67
L_3 (30 7525)		mm	24	24	32	40	45	48	62	60
L_3 (30 7517)		mm	26	26	42	47	53	59	–	–
V		mm	10							
M			M5	M6	M8×1	M10×1	M12×1	M16×1	M16×1	M16×1
suitable reducing adapter			–	–	–	302135 / 2140	–	302155 / 2160	–	302175 / 2180

HD chuck **short, slim**

DIN 69893 | ISO 12164-1 | Form A | G 2.5 25000 min^{-1} | ≤3µm | HPC | HSC

Garant

Slim hydraulic chuck 3° – ISO 121641 (DIN 69893-1)

- **Extremely slim design** (3°-contour).
- With Balluffchip bore.
- Axial length adjustment facility.
- Shanks hard turned.

Advantage:
- **Temperature-resistant** due to completely enclosed system, i.e. no soldered pressure chambers.
- Ideal damping characteristics.
- High transmissible torques, providing high process reliability.

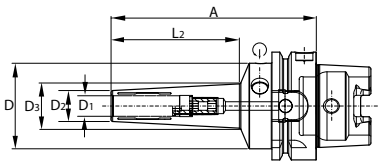
Application: Especially in operations in toolmaking and mould making.
Wherever reduced interference contours are required.
For drilling, reaming and milling
For clamping tools with shank tolerance h6.

Supplied with: Hexagon socket drive with T-handle.

Optional extras: Reducing sleeves No. 302135 – 302180.

30 7533

30 7537



Clamping ∅ D_1		mm	3	4	5	6	8	10	12	16	20
31A 30 7526	Slim hydraulic chuck	HSK-E 40 A = 85	XXX	XXX	XXX	XXX	XXX	XXX	XXX	–	–
31A 30 7528		HSK-E 50 A = 70	–	XXX	XXX	XXX	XXX	XXX	XXX	–	–
31A 30 7531		HSK-A 63	–	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
31A 30 7533		HSK-A 63 A = 120	(XXX)	(XXX)	(XXX)	(XXX)	(XXX)	(XXX)	(XXX)	(XXX)	(XXX)
31A 30 7536		HSK-A 63 A = 160	–	–	–	XXX	XXX	XXX	XXX	–	–
31A 30 7537		HSK-A 63 A = 200	–	–	–	XXX	(XXX)	XXX	XXX	–	–
31A 30 7543		HSK-A 100 A = 120	–	–	–	XXX	XXX	XXX	XXX	XXX	XXX
Dimension A (30 7531)		mm	–	80	80	80	80	85	90	95	100
∅ D_2 (30 7526, 30 7528, 30 7531, 30 7533, 30 7543)		mm	9	10	11	12	14	16	18	24	28
∅ D_2 (30 7536, 30 7537)		mm	–	–	–	16	18	20	22	–	–
∅ D_3 (30 7526)		mm	13.7	14.7	15.7	16.8	18.8	20.9	22.9	–	–
∅ D_3 (30 7528)		mm	–	13.88	14.88	15.99	17.99	20.1	20.1	–	–
∅ D_3 (30 7531)		mm	–	13.46	14.46	15.57	17.57	20.1	22.72	28.93	33.45
∅ D_3 (30 7533)		mm	16.7	17.7	18.7	20.4	22.4	24.5	26.6	31.5	35.5
∅ D_3 (30 7536)		mm	–	–	–	27.63	29.63	31.84	33.84	–	–
∅ D_3 (30 7537)		mm	–	–	–	31.93	33.93	36.14	38.14	–	–
∅ D_3 (30 7543)		mm	–	–	–	19.34	21.45	23.45	25.55	31.13	35.24
∅ D (30 7526)		mm	34	34	34	34	34	34	34	–	–
∅ D (30 7528)		mm	–	42	42	42	42	42	42	–	–
∅ D (30 7531, 30 7533, 30 7536, 30 7537, 30 7543)		mm	50								
L_2 (30 7526)		mm	45	45	45	46	46	47	47	–	–
L_2 (30 7528)		mm	–	37	37	38	38	39	39	–	–
L_2 (30 7531)		mm	–	33	33	34	34	39	45	47	52
L_2 (30 7533)		mm	73	73	73	73	74	74	75	71.5	72
L_2 (30 7536)		mm	–	–	–	111	111	113	113	–	–
L_2 (30 7537)		mm	–	–	–	152	152	154	154	–	–
L_2 (30 7543)		mm	–	–	–	70	71	71	72	68	69

ISO 12164-1 | DIN 69893 | Form A | G 2.5 25000 min⁻¹ | ≤3µm | HSC | HPC

Hydraulic chuck – version HT (High Torque) – ISO 12164-1 (DIN 69893-1)

- Very high total rigidity due to optimised design.
- With Balluffchip bore.
- Axial length adjustment available, adjustment travel 10 mm.
- Flexible due to the use of reducing sleeves.

Advantage:
- **Very high transmitted torque (550 Nm),** providing high process reliability.
- **Ideal damping characteristics,** resulting in optimum surface finishes, increased tool life and spindle protection.

Application:
- **Especially for heavy-duty milling.**
- For clamping tools with shank tolerance h6.

Supplied with: Hexagon cross-bar wrench.

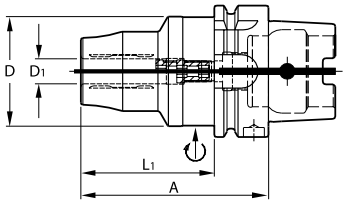
Optional extras: Coolant pipe No. 309880, coolant pipe wrench No. 309890

30 7550_20

30 7552_20

30 7553_20

Clamping range ∅ D_1			mm	12	16	20	32	
31H 30 7550	Garant	HT chuck	HSK-A 63 short	XXX	–	XXX	–	
32A 30 7552	HOLEX	HT chuck	HSK-A 63 short	–	–	XXX	–	new
31H 30 7553	Garant	HT chuck with cooling channel bores	HSK-A 63 short	XXX	XXX	XXX	–	
31H 30 7555		HT chuck	HSK-A 100 short	XXX	–	XXX	XXX	
32A 30 7557	HOLEX	HT chuck	HSK-A 100 short	–	–	XXX	–	new
Dimension A (30 7550, 30 7552, 30 7553)			mm	80	80	80	–	
Dimension A (30 7555)			mm	85	–	85	100	
Dimension A (30 7557)			mm	–	–	90	–	
∅ D			mm	52.5	52.5	52.5	72	
L_1 (30 7550, 30 7552, 30 7553)			mm	54	54	54	–	
L_1 (30 7555, 30 7557)			mm	56	–	56	71	
suitable reducing adapter				302140 / 302135	–	302160 / 302155	302180 / 302175	



DIN 69893 | ISO 12164-1 | Form A | G 2.5 25000 min⁻¹ | ≤3µm | HSC | HPC

WTE HPH (High Performance Holder) – ISO 12164-1 (DIN 69893-1)

- Very high total rigidity due to optimised design.
- With Balluffchip bore.
- Axial and radial adjustment available.
- Flexible due to the use of reducing sleeves.

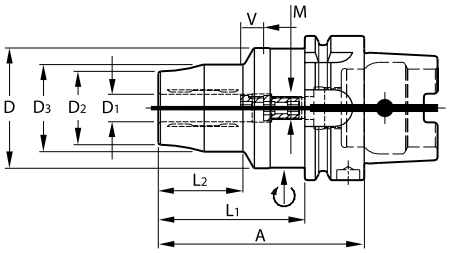
Advantage:
- **Very high transmitted torque,** providing high process reliability.
- **Ideal damping characteristics,** resulting in optimum surface finishes, increased tool life and spindle protection.

Application:
- **Especially for heavy-duty milling.**
- For clamping tools with shank tolerance h6.

Supplied with: Hexagon cross-bar wrench.

Optional extras: Coolant feed pipe No. 309880, Plug-in socket No. 309890, Reducing sleeves No. 302135 - 302180, for size 12; 20, and 32.

30 7610



Clamping range ∅ D_1		mm	6	8	10	12	14	16	18	20	25	32
33W 30 7610	HPH chuck	HSK-A 63	(XXX)	(XXX)	XXX	(XXX)	(XXX)	XXX	(XXX)	XXX	XXX	XXX
Dimension A		mm	80	80	85	90	90	95	95	100	120	125
∅ D_3		mm	32	34	36	38	40	42	44	48	57	63
∅ D_2		mm	26	28	30	32	34	36	38	42	51	57
∅ D		mm	50	50	50	52.5	52.5	52.5	52.5	52.5	53	53
L_1		mm	54	54	59	64	64	69	69	74	94	99
L_2		mm	26	27	32	37	37	42	42	45	62	62
V		mm	10									
transmissible torque M_D		N·m	50	90	130	200	250	310	400	500	650	750
Thread M			M5	M6	M8×1	M10×1	M10×1	M12×1	M12×1	M16×1	M16×1	M16×1
Weight		kg	1.1	1.1	1.2	1.3	1.3	1.5	1.5	1.5	2.1	2.3

DIN 69893 | ISO 12164-1 | Form A | G 2.5 25000 min⁻¹ | ≤3µm | HSC

WTE hydraulic chuck Comp-R

- **Concentricity adjustable to 0 µm.**
- Axial length adjustment, adjustment travel 10 mm.
- With Balluffchip bore.

Application: Perfect chuck for where maximum concentricity levels are required:
- Reaming.
- Drilling (especially small diameters).
- Use of delicate, expensive tools.
- For clamping of shank tolerance h6.

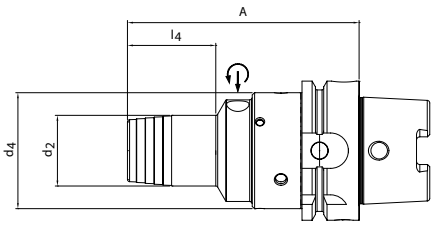
Optional extras: Reducer sleeves No. 302135 – 302180, coolant tube No. 309880, socket wrench for coolant tube No. 309890, parallel wipers No. 343720.

*Run-out adjustment by means of the adjustment wedge. **Advantage:** No damage to the reducing adapter; exactness of the clamping and the clamping process are capable of repetition accuracy.*

Allows the use of a reducing adapter.

30 7547

Clamping – ∅ D_1			mm	20
33W 30 7547	Hydraulic chuck Comp-R **Adjustable radial run-out**		HSK-A 63	(XXX)
33W 30 7548			HSK-A 100	(XXX)
Dimension A (30 7547)			mm	115
Dimension A (30 7548)			mm	120
∅ D_2			mm	42
External ∅ d_4			mm	52.5
l_4			mm	50



Short drill chucks with chuck key operation – ISO 12164-1 (DIN 69893-1)

- For clockwise and anticlockwise rotation.
- With Ballufchip bore.

30 7725/7735/7765/7775 – ■ **Slim design.**
- Specific coolant transfer to tools with IC.
- Optimum holding torques at the tool.

30 7681–7684/7725/7735 – With through coolant feed up to max. 50 bar.

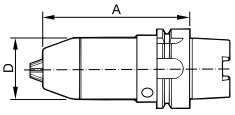
Supplied with: **Clamping wrench** with T-handle.

Optional extras: Socket wrench No. 309890. Coolant tube No. 309880.

Form A | G 2.5 25000 min⁻¹ | ≤20µm | ≤14 Nm | ≤50 bar

30 7725_0.5-13 ***slim***

30 7725_1-16 ***slim***



30 7725_0.3–8 ***slim***

Form A | G 2.5 25000 min⁻¹ | ≤50 bar | ≤20µm

30 7682_0,3-10

30 7682_0,5-16

Form A | G 6.3 15000 min⁻¹ | ≤50µm | ≤14 Nm

30 7765_2,5-16

Form A | G 2.5 25000 min⁻¹ | ≤30µm

30 7730_0,5-13

Clamping range				mm	0,3-8	0,3-10	0,5-13	0,5-16	1-16	2,5-16
31B 30 7681		Short drill chuck **Form E**	HSK-E 40		–	XXX	–	–	–	–
31B 30 7682		Short drill chuck **Form A**	HSK-A 63		–	XXX	–	XXX	–	–
31B 30 7684	Garant		HSK-A 100		–	–	–	XXX	–	–
31B 30 7725			HSK-A 63		XXX	–	XXX	–	XXX	–
33W 30 7705		Short drill chuck **Form F**	HSK-F 63		–	–	–	XXX	–	–
32K 30 7765	HOLEX	Short drill chuck **Form A**	HSK-A 63		–	–	–	–	–	XXX
33W 30 7730	WTE		HSK-A 63		XXX	–	XXX	–	–	XXX
31B 30 7735	Garant		HSK-A 100		–	–	–	–	XXX	–
32K 30 7775	HOLEX		HSK-A 100		–	–	–	–	–	XXX
33W 30 7760	WTE		HSK-A 100		–	–	XXX	–	–	XXX
Type (30 7681, 30 7682, 30 7684, 30 7725, 30 7705, 30 7765, 30 7735, 30 7775)					slim	slim	slim	standard	slim	slim
Type (30 7730, 30 7760)					standard	–	standard	–	–	standard
Dimension A (30 7681, 30 7684, 30 7725, 30 7765)				mm	93	91	101	111	104	104
Dimension A (30 7682, 30 7730, 30 7735)				mm	96	73	104	104	110	109
Dimension A (30 7705, 30 7760)				mm	–	–	111	102	–	116
Dimension A (30 7775)				mm	–	–	–	–	–	110
∅ D (30 7681, 30 7682, 30 7684, 30 7725, 30 7705, 30 7765, 30 7735, 30 7775)				mm	35	38	43	57	50	50
∅ D (30 7730, 30 7760)				mm	36	–	50	–	–	57
Spare Torx® screwdriver 625220 (30 7725, 30 7705, 30 7765, 30 7735, 30 7775)					TX25	–	TX25	TX25	TX25	TX25
Spare hexagon screwdriver 627425 (30 7681, 30 7682, 30 7684, 30 7730, 30 7760)					SW 4	4 AF	6 AF	6 AF	–	6 AF

Shrink-fit chucks 4.5° with retainer function

30 7945/7947 –
- High-temperature steel.
- Integral tool length adjustment, adjustment 5 mm.
- For carbide tools.
- All shanks hard turned (for a smooth cutting action!)
- With Balluffchip bore.
- **Strengthened version.**

ISO 12164-1 | DIN 69893 | Form ADB | G 2.5 25000 min^{-1}

≤3µm | HPC | HSC

Advantage:

30 7945/7947 – **Positive connection between the shrink-fit chuck and tool**
- **Prevents the tool being pulled out accidentally - high safety!**
- **Prevents jerky radial movement.**

In addition to the advantage of the process reliability, due to the reinforced design the chuck has a:
- Lower tendency to vibrate, i.e. longer tool life and better surface finishes.
- Higher clamping forces than with standard shrink-fit chucks.

Tools freely selectable! Shank grinding obtainable from Hoffmann, but also freely available!

Application:

30 7945/7947 – For clamping tools with parallel shank to h6 tolerance.
Protection against withdrawal: The tool must have a defined clamping flat.
Suitable for inductive, contact and hot-air shrink units.

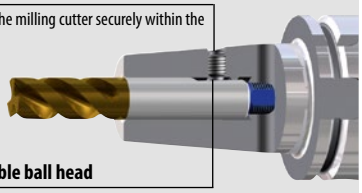
Optional extras:

30 7945/7947 – Pull studs (PS) No. 308600 – 308800, PS pull stud wrenches No. 308810– 308830, shrink-fit units, accessories No. 354210 – 354450.

Note:

30 7945/7947 – The milling cutter must have a defined clamping flat.
This clamping flat can be ordered for a new tool or an existing tool.
Number for clamping flat: SZ2025 suitable size. You can even create the clamping flat yourself, the data is available at: http://ho7.eu/anschliff.

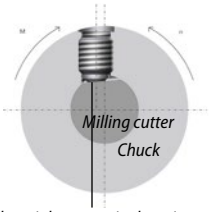
Insert screw
keeps the milling cutter securely within the chuck.



Movable ball head
adapts to the clamping surface.

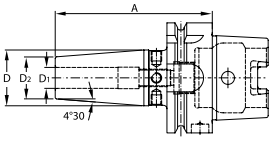
Square pin in the chuck
indicates the right orientation of the milling cutter.

Quick and easy positioning during the shrink process.



Lightweight eccentric clamping screw prevents the tool rotating.

30 7945



Clamping range ∅ D_1		mm	12	16	20
31A 30 7945	Garant Shrink-fit chucks 4.5° with retainer function	HSK-A 63	XXX	XXX	XXX
31A 30 7947		HSK-A 100	XXX	XXX	XXX
Dimension A (30 7945)		mm	90	95	100
Dimension A (30 7947)		mm	95	100	105
∅ D		mm	42	42	55
∅ D_2		mm	33	33	44
suitable tool grinding SZ2025 size			12	16	20

Shank ∅ tool		mm	12	16	20
19T SZ 2025	Shank clamping flats for shrink-fit chucks, with retainer function		(XXX)	(XXX)	(XXX)

ISO 12164-1 | DIN 69893 | G 2.5 25000 min^{-1} | ≤3µm | HSC

Garant Shrink-fit chucks 4.5° – ISO 12164-1 (DIN 69893-1)

- High-temperature steel.
- Integral tool length adjustment, adjustment track 10 mm.
- Size 3 – 5 for carbide, from size 6 for HSS and carbide.
- All shanks hard turned (for smooth running!).
- With Balluffchip bore.

GARANT: – HSK mating faces machined.

Application: For holding end mills and drills with parallel shank to h 6 tolerance.
Suitable for inductive, contact and hot air shrink-fitting units.

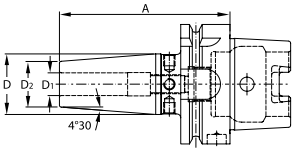
Optional extras: Coolant feed pipe No. 309880. Plug-in socket No. 309890.
Shrink-fit chuck extension No. 302410 – 302416.
Shrink-fit units No. 354210 – 304755.

Note:

30 8028 Size 12; 16 – Not prepared for coolant pipe.

Form A

30 7950



Clamping range ∅ D_1		mm	3	4	5	6	8	10	12	16
31A 30 7950	Shrink-fit chuck	HSK-A 40	XXX	XXX	XXX	XXX	XXX	XXX	XXX	–
31A 30 8028		HSK-E 40	–	–	–	XXX	XXX	XXX	XXX	XXX
31A 30 8030		HSK-E 40	XXX	XXX	XXX	XXX	XXX	XXX	XXX	–
Dimension A (30 7950, 30 8030)		mm	60	60	60	80	80	80	90	–
Dimension A (30 8028)		mm	–	–	–	60	60	60	60	60
∅ D		mm	17	17	17	27	27	32	32	32
∅ D_2		mm	12	12	12	21	21	24	24	24

ISO 12164-1 | DIN 69893 | G 2.5 25000 min⁻¹ | ≤3µm | HSC | HPC

Shrink-fit chucks 4.5° – ISO 12164-1 (DIN 69893-1)

- High-temperature steel.
- Size 3 – 5 for carbide, from size 6 for HSS and carbide.
- With Balluffchip bores.

30 8165 – **Ultra short:** More stability and stiffness, less vibration. This ensures longer tool life and better surface quality. No length adjustment available.

30 8170–8294 – Integral length adjustment of the tool from clamping Ø D_1 6 mm (adjustment travel 10 mm).

30 8165/8187/8192/8206/8277/8283/8284 – With **cooling channel bores** tapped for plugging.

30 8165/8170/8172/8183/8187/8189/8191/8192/8195/8196/8205/8206/8208/8235/8265/8267/8268/8277/8282/8283/8284/8285/8286/8294 – From clamping Ø D_1 6 mm with tapped holes for balancing screws.

30 8165/8170/8172/8184/8187/8189/8192/8193/8195/8196/8205/8206/8235/8265/8267/8277/8282/8283/8284/8285/8286/8294 – **GARANT:** HSK mating faces machined. **All shanks hard turned (for smooth running!).**

30 8172/8267 – Premium version: Nickel plated version with 4 pluggable **cooling channel bores.**

30 8184/8193 – Without tapped holes for balancing screws.

30 8196/8286 – With **cooling channel bores** tapped for plugging. Ø D1: 3 mm, 4 mm, 5 mm cannot be plugged.

Application:
- For holding end mills and drills with parallel shank to h6 tolerance.
- Suitable for inductive, contact and hot air shrink-fit units.

Supplied with: For chucks with length adjustment incl. a length adjustment screw (from clamping Ø D_1 6 mm).

Optional extras: Coolant tube No. 309880, socket wrench No. 309890, shrink-fit chuck extension No. 302410 – 302419, shrink-fit units No. 354210 – 354450, balancing screw set No. 309906 180.

Form A

30 8165

Form A

30 8170

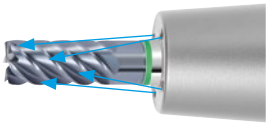
Form A

30 8191

Form F

30 8193

Different setting angles
of the cooling channel holes: Improved tool life thanks to optimised cooling and washing of the various chip flutes.

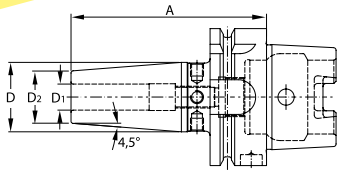


Perfect cooling
by four cooling channel holes which can be plugged

No corrosion
due to special surface coating (HSK ground)

Premium version

30 8172/30 8267



Clamping range Ø D_1			mm	3	4	5	6	8	10	12	14	16	18	20	25	32
31A 30 8165		Shrink-fit chuck **with cooling channel bore**	HSK-A 63 ultra short	–	–	–	–	–	XXX	XXX	–	XXX	–	XXX	XXX	–
31A 30 8170	Garant	Shrink-fit chuck	HSK-A 63 short	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	–
31A 30 8172		Shrink-fit chuck **with cooling channel bore, nickel plated**	HSK-A 63 short	–	–	–	XXX	XXX	XXX	XXX	–	XXX	–	XXX	–	–
33W 30 8183	WTE	Shrink-fit chuck	HSK-A 63 short	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
31A 30 8184			HSK-F 63 short	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	–	–
31A 30 8187	Garant	Shrink-fit chuck **with cooling channel bore**	HSK-A 63 short	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	–
31A 30 8189		Shrink-fit chuck	HSK-A 63 A = 120	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	–
33W 30 8191	WTE		HSK-A 63 A = 120	XXX	XXX	XXX	XXX	XXX	XXX	XXX	(XXX)	XXX	(XXX)	(XXX)	(XXX)	–
31A 30 8192	Garant	Shrink-fit chuck **with cooling channel bore**	HSK-A 63 A = 120	–	–	–	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	–	–
31A 30 8193		Shrink-fit chuck	HSK-F 63 A = 120	(XXX)	(XXX)	(XXX)	XXX	XXX	XXX	XXX	(XXX)	XXX	(XXX)	(XXX)	(XXX)	XXX
Dimension A (30 8165)			mm	–	–	–	–	–	70	70	–	75	–	75	85	–
Dimension A (30 8170, 30 8172, 30 8183, 30 8184, 30 8187)			mm	80	80	80	80	80	85	90	90	95	95	100	115	120
Ø D (30 8165)			mm	–	–	–	–	–	33	33	–	37	–	43	50	–
Ø D (30 8170, 30 8172, 30 8187, 30 8189, 30 8192)			mm	17	17	17	27	27	32	32	34	34	42	42	53	–
Ø D (30 8183)			mm	15	22	22	27	27	32	32	34	34	42	42	53	53
Ø D (30 8184, 30 8193)			mm	20	22	22	27	27	31	31	34	34	40	40	53	53
Ø D (30 8191)			mm	20	22	22	27	27	32	32	34	34	42	42	53	–
Ø D_2 (30 8165)			mm	–	–	–	–	–	26	26	–	29	–	35	45	–
Ø D_2 (30 8170, 30 8172, 30 8187, 30 8189, 30 8192)			mm	12	12	12	21	21	24	24	27	27	33	33	44	–
Ø D_2 (30 8183, 30 8191)			mm	10	15	15	21	21	24	24	27	27	33	33	44	44
Ø D_2 (30 8184, 30 8193)			mm	10	15	15	20	20	24	24	27	27	33	33	44	44

Clamping range ∅ D_1				mm	3	4	5	6	8	10	12	14	16	18	20	25	32
31A	30 8195	Garant	Shrink-fit chuck	HSK-A 63 A = 130	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
31A	30 8196	Garant	Shrink-fit chuck with cooling channel bore	HSK-A 63 A = 130	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
31A	30 8205	Garant	Shrink-fit chuck	HSK-A 63 A = 160	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	–
31A	30 8206	Garant	Shrink-fit chuck with cooling channel bore	HSK-A 63 A = 160	–	–	–	XXX	XXX	XXX	XXX	–	XXX	–	XXX	–	–
33W	30 8208	WTE	Shrink-fit chuck	HSK-A 63 A = 160	XXX	XXX	(XXX)	XXX	XXX	XXX	XXX	(XXX)	(XXX)	(XXX)	(XXX)	(XXX)	–
31A	30 8235			HSK-A 63 A = 200	–	–	–	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	–
31A	30 8267	Garant	Shrink-fit chuck with cooling channel bore, nickel plated	HSK-A 100 short	–	–	–	XXX	XXX	XXX	XXX	–	XXX	–	XXX	–	–
31A	30 8265		Shrink-fit chuck	HSK-A 100 short	–	–	–	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
33W	30 8268	WTE		HSK-A 100 short	–	–	–	XXX	XXX	(XXX)	XXX	(XXX)	XXX	(XXX)	XXX	(XXX)	XXX
31A	30 8277		Shrink-fit chucks with cooling channel bore	HSK-A 100 short	–	–	–	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
31A	30 8282		Shrink-fit chuck	HSK-A 100 A = 120	–	–	–	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	–
31A	30 8285			HSK-A 100 A = 160	–	–	–	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
31A	30 8283	Garant	Shrink-fit chucks with cooling channel bore	HSK-A 100 A = 120	–	–	–	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	–
31A	30 8284			HSK-A 100 A = 130	–	–	–	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	–
31A	30 8286			HSK-A 100 A = 160	–	–	–	XXX	XXX	XXX	XXX	–	XXX	–	XXX	XXX	–
31A	30 8294		Shrink-fit chuck	HSK-A 100 A = 200	–	–	–	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
Dimension A (30 8267, 30 8265, 30 8268, 30 8277)				mm	–	–	–	85	85	90	95	95	100	100	105	115	120
∅ D (30 8195, 30 8196, 30 8205, 30 8206, 30 8235, 30 8267, 30 8265, 30 8277, 30 8282, 30 8285, 30 8283, 30 8284, 30 8286, 30 8294)				mm	17	17	17	27	27	32	32	34	34	42	42	53	53
∅ D (30 8208)				mm	20	22	22	27	27	32	32	34	34	42	42	53	–
∅ D (30 8268)				mm	–	–	–	27	27	34	34	36	36	44	44	53	53
∅ D_2 (30 8195, 30 8196, 30 8205, 30 8206, 30 8235, 30 8267, 30 8265, 30 8268, 30 8277, 30 8282, 30 8285, 30 8283, 30 8284, 30 8286, 30 8294)				mm	12	12	12	21	21	24	24	27	27	33	33	44	44
∅ D_2 (30 8208)				mm	10	15	15	21	21	24	24	27	27	33	33	44	–

Garant Performance milling chuck

Specially developed milling chuck for the most demanding applications, ideally suited to TPC milling and high feed rate applications. Milling cutter will not be pulled out, more precise radial run-out, good process reliability!

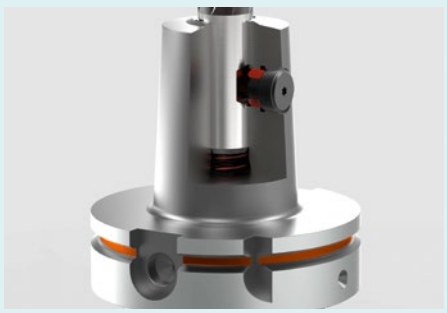
GARANT Performance -milling chucks ensure the following advantages:

- No risk of the cutter being pulled out, even when suddenly jerked.
- Precision version.
- Optimised external contour – vibration-damping behaviour.
- Thread self-locking, even when subjected to micro-vibrations.
- Nasty surprises in the form of shank breakages when opening the chuck and virtually completed excluded.
- Pleasant handling thanks to the differential thread.

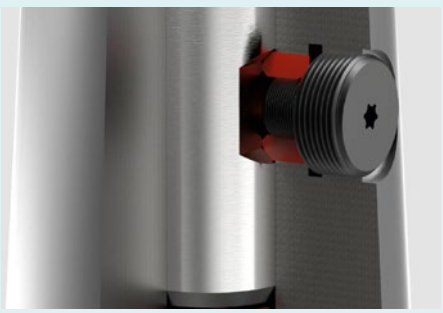
These can be found at:

SK: 30 0395 or 30 0398.

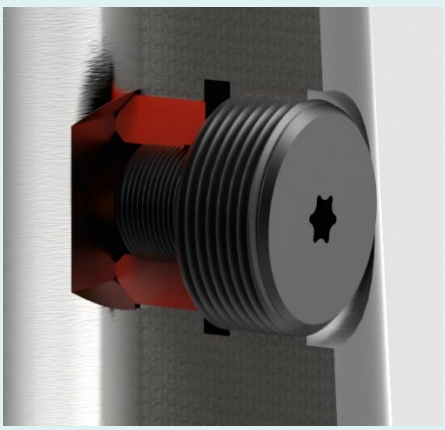
HSK: 30 4450 or 30 4460.



Spring in the base body presses the milling cutter or HB shank into the correct position.

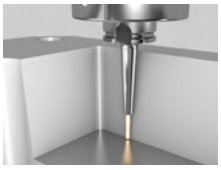


*Contact piece on the tightening screw holds the milling cutter in the HB **face.***



Differential thread on the tightening screw. Less manual force required to achieve the desired tightening torque.

DIN 69893 | ISO 12164-1 | ≤3µm | HSC



Garant Shrink-fit chucks 3° (for tool and mould making) – ISO 12164-1 (DIN 69893-1)

- All shanks hard turned (for smooth running!).
- HSK mating faces machined.
- **Slim design (3° contour).**
  30 8321 – Extra-slim style.

30 8302–8314/8321 – **Balancing quality 2.5 / 40,000 rpm.**
30 8316/8318 – **Balancing quality 2.5 / 25,000 rpm.** With Balluffchip bore.

Application:
- **Especially in tool and mould making.**
- For clamping tools with shank tolerance h6.

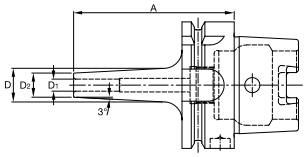
Optional extras: Coolant feed pipe No. 309880. Socket No. 309890.
Shrink-fit chuck extensions No. 302410 sizes 12/3 and 12/4.
Shrink–fit units No. 354210 – 354450.
Balancing screw set No. 309906 180.

G 2.5 40000 min^{-1} | Form E

30 8321

G 2.5 40000 min^{-1} | Form E

30 8302



G 2.5 25000 min^{-1} | Form A

30 8318

Clamping ∅ D_1			mm	3	4	5	6	8	10	12
31A 30 8321	Shrink-fit chuck **3°, extra slim**	**HSK-E 40 A = 60**		XXX	XXX	XXX	XXX	XXX	XXX	XXX
31A 30 8302	Shrink-fit chuck **3°**	**HSK-E 40 A = 60**		XXX	XXX	XXX	XXX	XXX	XXX	XXX
31A 30 8304		**HSK-E 40 A = 70**		XXX	XXX	XXX	XXX	XXX	XXX	XXX
31A 30 8306		**HSK-E 40 A = 80**		XXX	XXX	XXX	XXX	XXX	XXX	XXX
31A 30 8308		**HSK-E 50 A = 70**		XXX	XXX	XXX	XXX	XXX	XXX	XXX
31A 30 8312		**HSK-E 50 A = 80**		XXX	XXX	XXX	XXX	XXX	XXX	XXX
31A 30 8314		**HSK-E 50 A = 100**		XXX	XXX	XXX	XXX	XXX	XXX	XXX
31A 30 8316		**HSK-A 63 A = 80**		XXX	XXX	XXX	XXX	XXX	XXX	XXX
31A 30 8318		**HSK-A 63 A = 120**		XXX	XXX	XXX	XXX	XXX	XXX	XXX
∅ D (30 8321)			mm	10	11	12	13	15	17	19
∅ D (30 8302, 30 8308)			mm	14	15	16	17	19	21	23
∅ D (30 8304, 30 8312, 30 8316)			mm	15	16	17	18	20	22	24
∅ D (30 8306)			mm	16	17	18	19	21	23	25
∅ D (30 8314)			mm	17	18	19	20	22	24	26
∅ D (30 8318)			mm	19	20	21	22	24	26	28
∅ D_2 (30 8321)			mm	6	7	8	9	11	13	15
∅ D_2 (30 8302, 30 8304, 30 8306, 30 8308, 30 8312, 30 8314, 30 8316, 30 8318)			mm	9	10	11	12	14	16	18

ISO 12164-1 | DIN 69893 | Form A | G 2.5 25000 min^{-1} | ≤3µm | HSC

30 8328

Garant Shrink-fit chucks 4.5°, long version – ISO 12164-1 (DIN 69893-1)

- External taper 4°30′.
- With Balluffchip bore.
- HSK mating faces machined.

30 8329/8337 – With **cooling channel bores.**

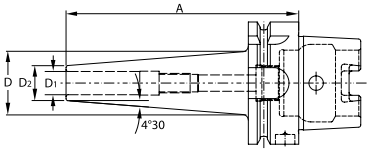
Application:
- **For working in places where access is particularly difficult.**
- For clamping tools with parallel shank to h6 tolerance.

Optional extras: Coolant pipe No. 309880, Plug-in socket No. 309890,
Shrink-fit extension No. 302410 size 12/3 and 12/4.
Shrink–fit units No. 354210 – 354450.
Balancing screw set No. 309906 180.

30 8329

Clamping range ∅ D_1			mm	6	8	10	12
31A 30 8328	Shrink-fit chuck **4°30′**	**HSK-A 63 A = 120**		XXX	XXX	XXX	XXX
31A 30 8329	Shrink-fit chuck **4°30′, with cooling channel bores**	**HSK-A 63 A = 120**		XXX	XXX	XXX	XXX
31A 30 8334	Shrink-fit chuck **4°30′**	**HSK-A 63 A = 160**		XXX	XXX	XXX	XXX
31A 30 8337	Shrink-fit chuck **4°30′, with cooling channel bores**	**HSK-A 63 A = 160**		XXX	XXX	XXX	XXX
∅ D			mm	30	30	33	33
∅ D_2			mm	15	15	18	18

new



ISO 12164-1 | DIN 69893 | Form A | G 2.5 25000 min⁻¹ | ≤3µm | HSC | HPC

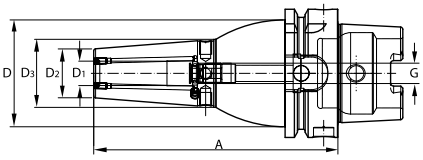
Garant Shrink-fit chucks „SP“ – ISO 12164-1 (DIN 69893-1)

- High-temperature steel.
- Integral tool length adjustment, adjustment track 10 mm.
- For HSS and carbide.
- Shanks hard turned (for smooth running!).
- With Balluffchip bore
- Bead-blasted
- With **cooling channel bores**, tapped for plugging.

Advantage: **Optimised design. Vibration-damping effect, better workpiece surface finish, protects spindle and tool.**

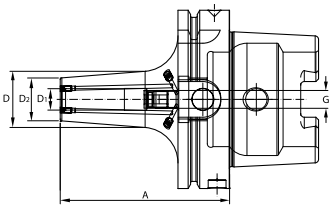
Application: For clamping tools with parallel shank to h6 tolerance. Suitable for inductive, contact and hot-air shrink units.

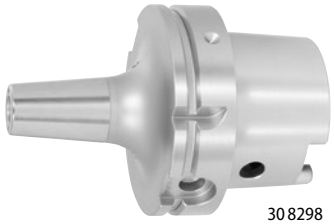
Optional extras: Shrink–fit chuck adaptors No. 302410 – 302419. Shrink-fit units, accessories No. 354210 – 304755.



Strengthened version

30 8297





30 8298

Clamping range ∅ D_1		mm	6	8	10	12	16	20	25	32
31A 30 8296	Shrink-fit chuck with cooling channel bores and **strengthened walls**	HSK-A 63 short	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
31A 30 8297		HSK-A 63 A = 120	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
31A 30 8298		HSK-A 100 short	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
Dimension A (30 8296)		mm	70	70	70	70	75	75	85	85
Dimension A (30 8298)		mm	85	85	90	95	100	105	115	120
∅ D (30 8296)		mm	28.8	28.8	33.3	33.3	37.1	43.1	52.5	52.5
∅ D (30 8297)		mm	52.5							
∅ D (30 8298)		mm	26.9	26.9	30.7	31.5	35.3	42.1	55.8	56.6
∅ D_2 (30 8296)		mm	22	22	26.5	26.5	29.5	35.5	45	45
∅ D_2 (30 8297, 30 8298)		mm	21	21	24	24	27	33	44	44
∅ D_3 (30 8297)		mm	29	29	32.7	33.4	36.9	43.2	52.5	52.5

ISO 12164-1 | DIN 69893 | Form E | G 2.5 25000 min⁻¹ | HSC

Garant MicroClamp – ISO 12164 (DIN 69893-1)

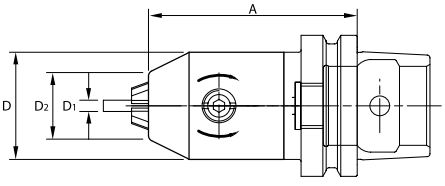
- For clockwise and anticlockwise rotation.
- Radial run-out < 0.01 mm.
- Transmissible torque 7 Nm.
- Permissible speed: 60,000 rpm
- Permissible tightening torque 2 Nm.

Supplied with: Clamping wrench with T-handle.

Optional extras: Coolant feed pipe No. 309880.

30 8394

Type			0,2-3
31H 30 8394	MicroClamp – precision drill chuck	HSK-E 40 A = 46	XXX
∅ D_1		mm	0.2 – 3.4
∅ D		mm	19
∅ D_2		mm	12
Spare chuck key			627425_2



Garant MicroClamp precision drill chuck

Extensive range of MicroClamp drill chucks.

Please just ask

- Further shanks (HSK-A, HSK-E, SK, BT, cylindrical)
- Clamping ranges

ISO 26623-1 | G 2.5 25000 min⁻¹ | ≤3µm | HSC | HPC

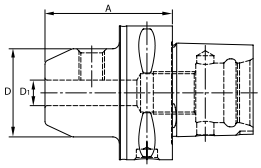
Garant Tool arbors with polygonal shank (PSC) – ISO 26623-1

- With Balluffchip bore.
- All shanks hard turned (for smooth running!).
- Mating faces of the PSC internal contour machined.

Optional extras: Coolant pipe No. 309885, coolant pipe wrench No. 309893.

PSC

30 8502



Sidelock arbors (Weldon)

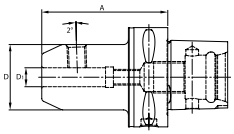
Application: For clamping tools with Weldon shank to DIN 1835 Form B and DIN 6535 Form HB.

Note:
Suitable reduction of PSC 63 to PSC 40 or PSC 50 No. 318892.
Suitable reducing adapter from SK 40 and HSK 63 to PSC 40 or PSC 50 No. 301275 and No. 306975.
Suitable reducing adapter for SK 50 and HSK 100 to PSC 63 or PSC 80 No. 301276 and No. 306976.
Suitable extensions see No. 318894, No. 318895 and No. 318896.

Clamping range ∅ D_1		mm	6	8	10	12	14	16	18	20	25	32
31C 30 8499	Side lock arbor	PSC 40 short	XXX	XXX	XXX	XXX	XXX	XXX	–	–	–	–
31C 30 8501		PSC 50 short	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	–
31C 30 8502		PSC 63 short	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
31C 30 8506	Side lock arbor **with cooling channel bores**	PSC 63 short	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
31C 30 8504	Side lock arbor	PSC 63 A = 100	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	–	–
31C 30 8509	Side clamping chuck **with cooling channel bores**	PSC 63 A = 100	XXX	XXX	XXX	XXX	–	XXX	–	XXX	–	–
31C 30 8508	Side clamping chuck	PSC 63 A = 130	XXX	XXX	XXX	XXX	–	XXX	–	XXX	–	–
31C 30 8503		PSC 80 short	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
Dimension A (30 8499)		mm	50	50	50	55	55	55	–	–	–	–
Dimension A (30 8501)		mm	50	50	55	60	60	60	60	60	80	–
Dimension A (30 8502, 30 8506)		mm	55	55	60	60	60	65	65	65	80	90
Dimension A (30 8503)		mm	70	70	70	70	70	70	70	70	80	80
∅ D		mm	25	28	35	42	44	48	50	52	65	72

Whistle-Notch

Application: For clamping tools with suitable clamping flat (2°) to DIN 1835 Form E and DIN 6535 Form HE (= Whistle Notch).



30 8510

Clamping range ∅ D_1		mm	6	8	10	12	14	16	18	20	25	32
31C 30 8510	Whistle-Notch arbor	PSC 63 short	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
Dimension A		mm	75	75	75	80	80	80	80	85	90	95
∅ D		mm	25	28	35	42	44	48	50	52	65	72

ISO 26623-1 | G 2.5 25000 min⁻¹ | ≤3µm | HPC | HSC

Garant HiRunER precision ER collet chuck - ISO26623-1

External and internal tapers are ground. All shanks are turned for a smooth cutting action. Including Balluffchip bore, high-performance clamping nut up to 25000 rpm.

Advantage:
- **Excellent concentricity in the system** (chuck + collet + clamping nut), 3 µm radial run-out with a 2 µm clamping nut, 6 µm radial run-out with a 5 µm clamping nut.
- **Extremely strong holding force** (up to **factor 2** better than the standard ER chuck).
- **Vibration reduction effect** due to 2-part clamping nuts.

Application: For clamping tools with plain shank in collets to DIN 6499 – Form A and B.

Supplied with: Supplied with **precision clamping nut.**

Optional extras: Coolant pipe No. 309885, Coolant pipe plug-in socket No. 309893, ER collets No. 308901 – 309434, ER clamping wrenches No. 309748 / 309749.

Standard ER chuck -> Collets are not inserted 100 % into the chuck.

HiRunER -> the full surface of the collet is seated in the chuck -> higher retention forces! -> reduced radial run-out!

Note:
- Clamps only nominal ∅ up to shank ∅ tolerance h 10.
- Do not use the clamping nut in combination with a sealing washer.
- Use the precision collet chuck always in conjunction with the precision clamping nut No. 309617.
- Use in combination with Fahrion collets.

30 8542

for ER collets		ER	16	25	32
31C 30 8542	HiRunER precision ER collet chuck	PSC 63 A = 100	XXX	XXX	XXX
Clamping range		mm	1 – 10	1 – 16	2 – 19
∅ D		mm	34	44	52
Spare ER clamping nut 309617			16	25	32

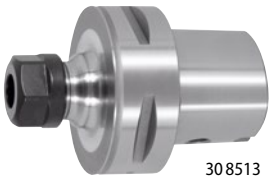
ISO 26623-1 | G 2.5 25000 min^{-1}

PSC

Tool arbors with polygonal shank (PSC) – ISO 26623-1

- With Balluffchip bore.
- All shanks hard turned (for smooth running!).
- Mating faces of the PSC internal contour machined.

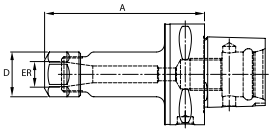
Optional extras: Coolant pipe and plug-in socket No. 309885 / 9893.


30 8513

ER collet chuck

≤3µm | HSC

Application: For clamping tools with plain shank in ER collets to DIN 6499 Form A and B.
Supplied with: Coated high-speed clamping nut.
Optional extras: ER collets No. 308881 – 309434. ER chuck keys No. 309680 – 309740.



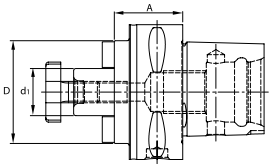
for ER collets		ER	16	25	32	40
31C 30 8513	ER collet chuck	PSC 40 short	XXX	XXX	XXX	–
31C 30 8514		PSC 50 short	XXX	XXX	XXX	–
31C 30 8515		PSC 63 short	XXX	XXX	XXX	XXX
31C 30 8522		PSC 63 A = 100	XXX	XXX	XXX	XXX
31C 30 8530		PSC 63 A = 130	–	XXX	XXX	–
31C 30 8535		PSC 63 A = 160	XXX	XXX	–	–
31C 30 8539		PSC 80 short	XXX	XXX	XXX	XXX
Clamping range		mm	0.5 – 10	1 – 16	2 – 20	3 – 26
Dimension A (30 8513)		mm	70	55	55	–
Dimension A (30 8514)		mm	55	55	60	–
Dimension A (30 8515)		mm	60	60	60	65
Dimension A (30 8539)		mm	65	70	70	70
∅ D		mm	28	42	50	63
Spare high-speed nut GARANT No. 309610			16	25	32	40

Face mill arbors

≤6µm | HPC

Application: For holding shell end mills and face mills with cross keyway.
Supplied with: Lock screw.
Optional extras: Toggle spanner No. 309840, cutter lock screw No. 309860.

30 8546



Spigot ∅ d_1		mm	16	22	27	32	40
new 31A 30 8543	Face mill arbor with cooling channel bores	PSC-40 short	XXX	XXX	–	–	–
new 31A 30 8544		PSC-50 short	XXX	XXX	XXX	–	–
31C 30 8546		BT 63 ultra short	XXX	XXX	XXX	XXX	–
31C 30 8547		PSC 63 A = 65	XXX	XXX	XXX	XXX	–
31C 30 8551		PSC 80 short	XXX	XXX	XXX	XXX	XXX
Dimension A (30 8543)		mm	32	25	–	–	–
Dimension A (30 8544)		mm	35	25	25	–	–
Dimension A (30 8546)		mm	40	25	25	25	–
Dimension A (30 8551)		mm	50	50	50	60	60
∅ D (30 8543, 30 8544, 30 8546, 30 8547)		mm	38	48	60	63	–
∅ D (30 8551)		mm	38	48	60	78	88

ISO 26623-1 | G 2.5 25000 min^{-1} | ≤3µm | HPC | HSC

PSC

Hydraulic chucks, version HT (High Torque) - ISO26623-1

- With Balluffchip bore.
- Axial length adjustment (adjustment 10 mm) available.
- Flexible due to use of reducing sleeves.

Application: ■ Maximum transmissible torque **550 Nm,** version HT (High Torque).
Optional extras: ■ Slotted reducing adapters No. 302155 and No. 302160.

30 8556

Clamping ∅ D1			mm	20
31C 30 8556	HD chuck **HD chuck short, version HT**	PSC 63		XXX
Dimension A			mm	80
∅ D			mm	49
L_1			mm	41

ISO 26623-1 | ≤3µm

Tool arbors with polygonal shank (PSC) – ISO 26623-1

PSC

- With Balluffchip bore.
- All shanks hard turned (for smooth running!).
- Mating faces of the PSC internal contour machined.

Optional extras: Coolant pipe and plug-in socket No. 309885 / 9893.

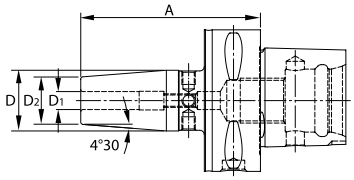
Shrink-fit chucks 4° 30′

G 2.5 25000 min⁻¹ | HSC | HPC

Application: For clamping tools with shank tolerance h6.
Optional extras: Shrink–fit chuck extensions No. 302410 – 302417. Shrink-fit units No. 354210 – 354450.

Note:
30 8568 Size 3–5 – No length adjustment available.

30 8568



Clamping range ∅ D_1		mm	3	4	5	6	8	10	12	14	16	18	20	25	32
31C 30 8566	Shrink-fit chuck	PSC 40 short	–	–	–	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	–	–
31C 30 8567		PSC 50 short	–	–	–	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	–
31C 30 8568		PSC 63 short	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
31C 30 8571		PSC 63 A = 120	–	–	–	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	–	–
31C 30 8573	Shrink-fit chuck with cooling channel bore	PSC 63 short	–	–	–	XXX	XXX	XXX	XXX	–	XXX	–	XXX	–	–
31C 30 8574		PSC 63 A = 120	–	–	–	XXX	XXX	XXX	XXX	–	XXX	–	XXX	–	–
31C 30 8575	Shrink-fit chuck	PSC 80 short	–	–	–	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
Dimension A (30 8566, 30 8567)		mm	–	–	–	75	75	75	75	80	80	80	85	90	–
Dimension A (30 8568, 30 8573, 30 8575)		mm	80	80	80	80	80	80	80	85	85	85	85	90	95
∅ D		mm	17	17	17	27	27	32	32	34	34	42	42	53	53
∅ D_2		mm	12	12	12	21	21	24	24	27	27	33	33	44	44

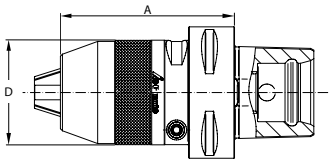
Precision short drill chucks with polygonal shank (PSC)

G 2.5 18000 min⁻¹ | ≤14 Nm

- For clockwise and anticlockwise rotation.
- Sand-blasted.

Supplied with:
30 8587 – **Clamping wrench.**
30 8595 – **Torx® clamping wrench.**

30 8595



Clamping range		mm	0,3-10	1-16
31B 30 8587	Short drill chuck	PSC 40	XXX	–
31B 30 8595		PSC 63	–	XXX
Dimension A		mm	74	93.1
∅ D		mm	36	50
Spare Torx® screwdriver 625220			–	TX25
Spare hexagon screwdriver 627425			4 AF	–

Wrench for pull studs

Single-piece wrench.
Advantage: Unlike conventional clamping wrenches it cannot slip, no risk of injury!
Application: For safe tightening of pull studs.

Note: See pages 861–862 for suitable pull studs.

30 8820

30 8825

suitable for steep tapers			SK	30	40	50
37D 30 8820		Pull stud wrench for Pull studs to DIN 69872		–	XXX	XXX
31Z 30 8825	Garant			–	XXX	XXX
37D 30 8830		Pull stud wrench for Pull studs to ISO 7388		–	XXX	XXX
31Z 30 8835	Garant			XXX	XXX	–
Width across flats AF (30 8820, 30 8825)			mm	–	19	30
Width across flats AF (30 8830, 30 8835)			mm	13	18	30

Pull studs (PS) for tool arbors – accessories

Application:
- For tools with taper shanks see also **DIN 69871 and JIS B 6339** (MAS-BT).
- In machining centres (machines **with** automatic tool changers).
- In NC machines (machines **without** automatic tool changers).

Note: Look in the eShop - you will find the right clamping wrench for every job.

Pull studs

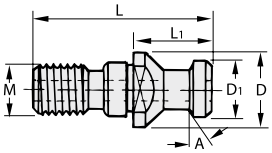
DIN 69872

suitable for steep tapers				30	40	50
31Z 30 8600	Garant	Pull stud **Form A**	**with bore**	–	XXX	XXX
31Z 30 8605	Garant	Pull stud, 18CrNiMo7 **Form A**	**with bore**	–	XXX	XXX
32Z 30 8610	HOLEX	Pull stud **stud sealed, form A**	**with bore**	XXX	XXX	XXX
31Z 30 8615	Garant	Pull stud, 18CrNiMo7 **sealed, form B**	**without bore**	–	XXX	XXX
31Z 30 8620	Garant	Pull stud **sealed, form B**	**without bore**	–	XXX	XXX
32Z 30 8625	HOLEX	Pull stud **Mori-Seiki, sealed, form A**	**with bore Ø 7 mm**	–	XXX	–
32Z 30 8630	HOLEX		**with bore Ø 7 mm**	–	XXX	–
Ø D			mm	17	23	36
Ø D_1			mm	13	19	28
L			mm	44	54	74
L_1 (30 8600, 30 8605, 30 8610, 30 8615, 30 8620, 30 8625)			mm	24	26	34
L_1 (30 8630)			mm	–	29	–
M				M12	M16	M24
Angle A (30 8625, 30 8630)			degrees	–	15	–
maximum tightening torque			N·m	20	50	150
suitable for taper arbors with colour code						

30 8600 / 8605

30 8610

30 8615 / 8620

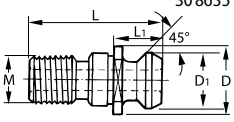


Suitable for:

30 8635 – FADAL, similar to ISO 7388, 3 mm, extended.

suitable for steep tapers				40
32Z 30 8635	HOLEX	Pull stud **sealed**	**with bore**	XXX
Ø D			mm	22
Ø D_1			mm	18.95
L			mm	47.5
L_1			mm	19.25
M				M16
maximum tightening torque			N·m	50
suitable for taper arbors with colour code				

30 8635

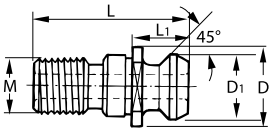


ISO 7388

suitable for steep tapers				40	50
31Z 30 8640	Garant	Pull stud **Form B**	**with bore**	XXX	XXX
32Z 30 8650	HOLEX	Pull stud **sealed, form B**	**with bore**	XXX	XXX
31Z 30 8660	Garant	Pull stud **sealed**	**without bore**	XXX	XXX
Ø D			mm	22.5	36
Ø D_1			mm	18.95	29.1
L			mm	44.5	65.5
L_1			mm	16.25	25.55
M				M16	M24
maximum tightening torque			N·m	50	150
suitable for taper arbors with colour code					

30 8640

30 8660



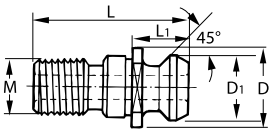
Pull studs - Mazak (with end face ground flat)

CAT

- End face turned flat.

suitable for steep tapers				40M	40M7
32Z 30 8670	HOLEX	Pull stud **Mazak sealed, form A**	**with bore**	XXX	XXX
Ø D			mm	21.8	
Ø D_1			mm	18.79	
L			mm	41.25	
L_1			mm	16.25	
M				M16	
maximum tightening torque			N·m	50	
suitable for taper arbors with colour code					
Bore Ø			mm	6	7

30 8670



Colour code: SK 30 SK 40 SK 50

HOLEX Pull studs (PS) for tool arbors – accessories

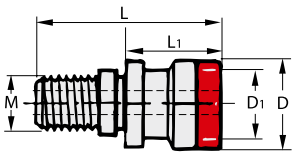
Note: Look in the eShop - you will find the right clamping wrench for every job.

Special pull stud with snap ring groove

Application: For tools with taper shanks see also **DIN 69871 / ISO 7388-1**.

suitable for steep tapers				40	50
32Z 30 8700	Special pull stud with no internal thread **sealed**	**without bore**		XXX	–
32Z 30 8720	Special pull stud with no internal thread **sealed**	**with bore**		XXX	XXX
32Z 30 8740	Special pull stud with internal thread	**with bore**		XXX	XXX
Ø D			mm	25.1	39.3
Ø D_1			mm	21.1	32
L			mm	53	65
L_1			mm	25.1	
M				M16	M24
Internal thread (30 8740)				M16	M24
Internal thread depth (30 8740)			mm	17	17.5
maximum tightening torque			N·m	50	150
suitable for taper arbors with colour code					

30 8700_40



30 8720_50

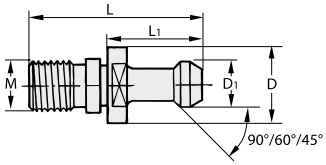
Pull studs 45°, 60°, 90°

MAS 403

Application: For tools with taper shanks see also **JIS B 6339** (MAS-BT) / **ISO 7388-2.**

suitable for steep tapers				30	40	50
32Z 30 8760	Pull stud 45° **sealed**	**without bore**		XXX	XXX	XXX
32Z 30 8765		**with bore**		XXX	XXX	XXX
32Z 30 8785	Pull stud 60° **sealed**	**with bore**		XXX	XXX	XXX
32Z 30 8790	Pull stud 90° **sealed**	**without bore**		–	XXX	XXX
32Z 30 8795		**with bore**		–	XXX	XXX
Ø D			mm	16.5	23	38
Ø D_1			mm	11	15	23
L			mm	43	60	85
L_1			mm	23	35	45
M				M12	M16	M24
maximum tightening torque			N·m	20	50	150
suitable for taper arbors with colour code						

30 8760_40



Application: For tools with taper shanks see also **DIN 69871 / ISO 7388-1.**

suitable for steep tapers			40
32Z 30 8801	Pull stud Hurco 45° with bore and fit **sealed**		XXX
32Z 30 8802	Pull stud Hurco 45° with fit **sealed**		XXX
32Z 30 8806	Pull stud Hurco 90° with fit **sealed**		XXX
32Z 30 8680	Pull stud Haas-Mikron R 3 / 45° with bore and fit **sealed**		XXX
32Z 30 8685	Pull stud Haas-Mikron R 3 / 45° without bore **sealed**		XXX
Ø D		mm	23
Ø D_1		mm	15
L (30 8801, 30 8802, 30 8806)		mm	57.15
L (30 8680, 30 8685)		mm	57
L_1		mm	32
M			M16
maximum tightening torque		N·m	50
suitable for taper arbors with colour code			

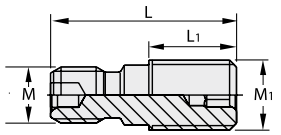
30 8803

30 8680

Pull studs with buttress thread S20×2

suitable for steep tapers			40
32Z 30 8800	Special pull stud **S20×2**		XXX
L		mm	53
L_1		mm	25
M			M16
M_1			S20×2
maximum tightening torque		N·m	50
suitable for taper arbors with colour code			

30 8800



Colour code: SK 40 SK 50 SK 30

≤5µm

FAHRION® PRAZISION

Precision ER collets – for ER collet chucks – accessories

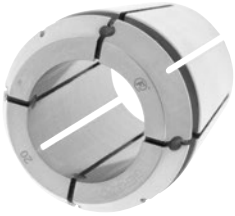
Through hardened and ground.
Corrosion protection: Collets fully coated with FAHRION Protect, including the functional faces.
Advantage: The coating increases the service life of the collet and ensures full functionality and precision.

FAHRION Protect

Note:
30 8878–8881/8901/8911/8941/8981/8990 – The **collet clamping ∅ range** is **always up to 1 mm less than nominal,** e.g. ∅ 10 – 9 mm, **except for ∅ 1, 1.5 and 2 (where it is only 0.5 mm).**
30 8882/8906/8916/8946/8986/8992 – With **seal** for through-coolant (for use up to 100 bar); only the nominal size can be clamped. **Similar to** ISO 15488-A.

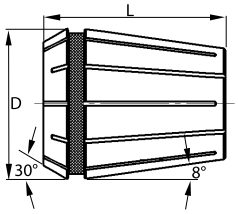
ISO 15488-A

30 8906

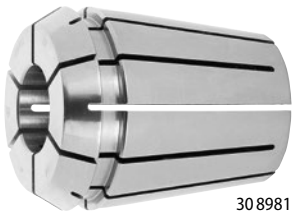


Sealed variant, no sealing washer necessary.

Nominal clamping ∅ d	39Y 30 8878	39Y 30 8881	39Y 30 8882	39Y 30 8901	39Y 30 8906	39Y 30 8911	39Y 30 8916
	ER collet						
			with seal		with seal		with seal
mm	ER 8	ER 11	ER 11	ER 16	ER 16	ER 20	ER 20
1	XXX	XXX	–	XXX	–	XXX	–
1,5	XXX	XXX	–	XXX	–	XXX	–
2	XXX	XXX	–	XXX	–	XXX	–
2,5	XXX	XXX	–	XXX	–	XXX	–
3	XXX	XXX	XXX	XXX	XXX	XXX	XXX
3,5	XXX	XXX	–	–	–	–	–
4	XXX	XXX	XXX	XXX	XXX	XXX	XXX
4,5	XXX	XXX	–	–	–	–	–
5	XXX	XXX	XXX	XXX	XXX	XXX	XXX
5,5	–	XXX	–	–	–	–	–
6	–	XXX	XXX	XXX	XXX	XXX	XXX
6,5	–	XXX	–	–	–	–	–
7	–	XXX	–	XXX	XXX	XXX	(XXX)
8	–	–	–	XXX	XXX	XXX	XXX
9	–	–	–	XXX	XXX	XXX	(XXX)
10	–	–	–	XXX	XXX	XXX	XXX
11	–	–	–	–	–	XXX	(XXX)
12	–	–	–	–	–	XXX	XXX
13	–	–	–	–	–	XXX	–
Type	4004 E	4008 E	4012 E	426 E	425 E	428 E	427 E
∅ D mm	8.5	11.3	11.2	17	16.7	21	20.7
L mm	13.6	18	18	27.5	27.5	31.5	31.5



ISO 15488-B



30 8981

Nominal clamping ∅ d	39Y 30 8941	39Y 30 8946	39Y 30 8981	39Y 30 8986	39Y 30 8990	39Y 30 8992
	ER collet					
		with seal		with seal		with seal
mm	ER 25	ER 25	ER 32	ER 32	ER 40	ER 40
2	XXX	–	–	–	–	–
2,5	XXX	–	–	–	–	–
3	XXX	XXX	XXX	XXX	–	–
4	XXX	XXX	XXX	XXX	XXX	–
5	XXX	XXX	XXX	XXX	XXX	–
6	XXX	XXX	XXX	XXX	XXX	XXX
7	XXX	XXX	XXX	XXX	XXX	–
8	XXX	XXX	XXX	XXX	XXX	XXX
9	XXX	XXX	XXX	XXX	XXX	–
10	XXX	XXX	XXX	XXX	XXX	XXX
11	XXX	XXX	XXX	XXX	XXX	–
12	XXX	XXX	XXX	XXX	XXX	XXX
13	XXX	XXX	XXX	XXX	XXX	–
14	XXX	XXX	XXX	XXX	XXX	XXX
15	XXX	XXX	XXX	(XXX)	XXX	–
16	XXX	XXX	XXX	XXX	XXX	XXX
17	–	–	XXX	(XXX)	XXX	–
18	–	–	XXX	XXX	XXX	XXX
19	–	–	XXX	XXX	XXX	–
20	–	–	XXX	XXX	XXX	XXX
21	–	–	–	–	XXX	–
22	–	–	–	–	XXX	XXX
23	–	–	–	–	XXX	–
24	–	–	–	–	XXX	–
25	–	–	–	–	XXX	XXX
26	–	–	–	–	XXX	–
Type	430 E	429 E	470 E	469 E	472 E	471 E
∅ D mm	26	25.7	33	32.7	41	40.7
L mm	34	34	40	40	46	46

Recommended tightening torque (MA) ER collet

Code letter	Shank∅ [mm]	MA [Nm]	Shank∅ [mm]	MA [Nm]	Shank∅ [mm]	MA [Nm]	Shank∅ [mm]	MA [Nm]
ER 11	1.0 - 2.5	7	3.0 - 7.0	10	–	–	–	–
ER 16	1.0	10	1.5 - 3.5	25 - 30	4.0 -10.0	50 -55	–	–
ER 20	1.0 - 3.0	15 - 20	3.0 - 5.5	30 - 35	6.0 - 9.0	50 - 55	9.5 - 13.0	70 - 75
ER 25	1.0 - 3.0	25 - 30	3.5 - 6.5	35 - 40	7.0 - 10.0	55 - 60	10.5 - 16.0	80 - 90
ER 32	2.0 - 3.0	30 - 35	3.5 - 6.5	55 - 60	7.0 - 15.5	110 - 120	16.0 - 20.0	130 - 140
ER 40	3.0 - 7.0	60 - 70	8.0 - 11.0	100 - 110	12.0 - 17.0	140 - 150	18.0 - 26.0	190 - 200

30 9014/9018/9022/9026 – With seal.

Supplied with:

30 9008/9010 – In a wooden box, 0.5 mm increments.

30 9012–9021/9024/9028 – In a wooden box, 1 mm increments.

30 9022/9026 – In a wooden box, 2 mm increments.

ISO 15488-B

30 9024

ISO 15488-A

30 9026

39Y 30 9008	39Y 30 9010	39Y 30 9012	39Y 30 9014	39Y 30 9016	39Y 30 9018	39Y 30 9021	39Y 30 9022	39Y 30 9024	39Y 30 9026	39Y 30 9028
ER collet set 9 pieces 1–5 mm	ER collet set 13 pieces 1–7 mm	ER collet set 10 pieces 1–10 mm	ER collet set 6 pieces, 3, 4, 5, 6, 8, 10 mm	ER collet set 12 pieces 2–13 mm	ER collet set 7 pieces 3, 4, 5, 6, 8, 10, 12 mm	ER collet set 15 pieces 2–16 mm	ER collet set 7 pieces 4–16 mm	ER collet set 18 pieces 3–20 mm	ER collet set 8 pieces 4–16, 20 mm	ER collet set 23 pieces 4–26 mm
			with seal		with seal		with seal		with seal	
ER 8	ER 11	ER 16	ER 16	ER 20	ER 20	ER 25	ER 25	ER 32	ER 32	ER 40
XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX

≤10µm

HOLEX ER collets – for ER collet chucks – accessories

ISO 15488-B

30 9000

Through hardened and ground. Polished.

30 8922/8962/9002 –Sealed versions with spray nozzles only for nominal ∅.

Note:

30 8920/8930/8960/9000/9040 – The **collet clamping ∅ range** is **always up to 1 mm less than nominal,** e.g. ∅ 10 – 9 mm, **except for ∅ 1, 1.5 and 2 (where it is only 0.5 mm).**

30 8920/8960/9000 – Collets ER16, ER25 and ER32 without a seal also available in inch sizes via the eShop.

ISO 15488-A

30 8922

Nominal clamping ∅ d	32Z 30 8918	32Z 30 8920	32Z 30 8922	32Z 30 8930	32Z 30 8960	32Z 30 8962	32Z 30 9000	32Z 30 9002	32Z 30 9040
	ER collet								
			with seal and spray nozzles			with seal and spray nozzles		with seal and spray nozzles	
mm	ER 11	ER 16	ER 16	ER 20	ER 25	ER 25	ER 32	ER 32	ER 40
1	XXX	XXX	–	XXX	–	–	–	–	–
2	XXX	XXX	–	XXX	XXX	–	–	–	–
3	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	–
4	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
5	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
6	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
7	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
8	–	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
9	–	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
10	–	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
11	–	–	–	XXX	XXX	XXX	XXX	XXX	XXX
12	–	–	–	XXX	XXX	XXX	XXX	XXX	XXX
13	–	–	–	XXX	XXX	XXX	XXX	XXX	XXX
14	–	–	–	–	XXX	XXX	XXX	XXX	XXX
15	–	–	–	–	XXX	XXX	XXX	XXX	XXX
16	–	–	–	–	XXX	XXX	XXX	XXX	XXX
17	–	–	–	–	–	–	XXX	XXX	XXX
18	–	–	–	–	–	–	XXX	XXX	XXX
19	–	–	–	–	–	–	XXX	XXX	XXX
20	–	–	–	–	–	–	XXX	XXX	XXX
21	–	–	–	–	–	–	–	–	XXX
22	–	–	–	–	–	–	–	–	XXX
23	–	–	–	–	–	–	–	–	XXX
24	–	–	–	–	–	–	–	–	XXX
25	–	–	–	–	–	–	–	–	XXX
26	–	–	–	–	–	–	–	–	XXX
Type	4008E	426 E	425 E	428 E	430 E	429 E	470 E	469 E	472 E
∅ D mm	11.3	17	17	21	26	26	33	33	41
L mm	18	27.5	27.5	31.5	34	34	40	40	46

≤10µm

HOLEX ER collet set

Through hardened and ground. Polished.

30 9165 – ∅ 1 mm and 2 mm are without spray nozzles and are not sealed.

30 9245 – ∅ 2 mm without spray nozzles and not sealed.

30 9165/9245/9285 –Sealed versions with spray nozzles only for nominal ∅.

Supplied with:

30 9165 – In a case with rigid foam inlay, 1 mm increments.

30 9155–9160/9200–9320 – In a case with rigid foam inlay, 1 mm increments.

ISO 15488-B

30 9280

32Z	30 9155	32Z	30 9160	32Z	30 9165	32Z	30 9200	32Z	30 9240	32Z	30 9245	32Z	30 9280	32Z	30 9285	32Z	30 9320
	ER collet set 7 pieces 1–7 mm		ER collet set 10 pieces 1–10 mm				ER collet set 12 pieces 2–13 mm		ER collet set 15 pieces 2–16 mm				ER collet set 18 pieces 3–20 mm				ER collet set 23 pieces 4–26 mm
					with seal and spray nozzles						with seal and spray nozzles				with seal and spray nozzles		
	ER 11		ER 16		ER 16		ER 20		ER 25		ER 25		ER 32		ER 32		ER 40
	XXX		XXX		XXX		XXX		XXX		XXX		XXX		XXX		XXX

ISO 15488-A

≤10µm

HOLEX ER collets, sealed - for ER collet chucks

∅ 2 mm without seal.

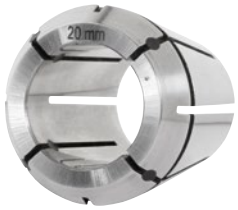
30 9164 – ∅ 1 mm and 2 mm are without seal.

30 9244 – ∅ 2 mm without seal.

Supplied with:

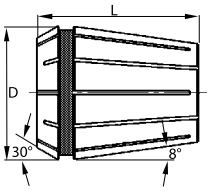
30 9164–9284 – In a case with rigid foam inlay, 1 mm increments.

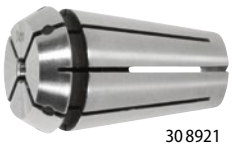
Note:	Collets ER16, ER25 and ER32 with seal also available in inch sizes via the eShop.



Sealed variant, no sealing washer necessary.

Nominal clamping ∅ d	32Z	30 8921	32Z	30 8959	32Z	30 9001
				ER collet with seal		
mm		ER16		ER25		ER32
3		XXX		XXX		XXX
4		XXX		XXX		XXX
5		XXX		XXX		XXX
6		XXX		XXX		XXX
7		XXX		XXX		XXX
8		XXX		XXX		XXX
9		XXX		XXX		XXX
10		XXX		XXX		XXX
11		–		XXX		XXX
12		–		XXX		XXX
13		–		XXX		XXX
14		–		XXX		XXX
15		–		XXX		XXX
16		–		XXX		XXX
17		–		–		XXX
18		–		–		XXX
19		–		–		XXX
20		–		–		XXX
Type		425 E		429 E		469 E
∅ D	mm	17		26		33
L	mm	27.5		34		40





30 8921

30 9001

32Z	30 9164	32Z	30 9244	32Z	30 9284
	ER collet set 10 pieces 1–10 mm		ER collet set 15 pieces 2–16 mm		ER collet set 18 pieces 3–20 mm
	with seal		with seal		with seal
	ER16		ER25		ER32
	XXX		XXX		XXX

30 9164

≤2µm

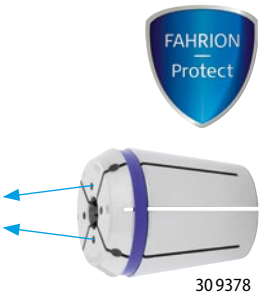
ISO 15488-A | ISO 15488-B

FAHRION® PRÄZISION HP precision ER collets for CENTRO P – accessories

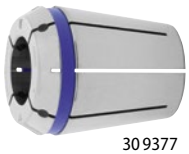
System concentricity and repetition accuracy **3 µm** (3×D, maximum = 50 mm), in conjunction with FAHRION CENTRO P chucks.
Corrosion protection: Collets fully coated with FAHRION Protect, including the functional faces.
Suitable for: Precision ER collet chuck CENTRO P.
Advantage: The coating increases the service life of the collet and ensures full functionality and precision.

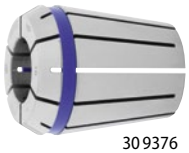
Note:
- Optimum concentricity only when used in CENTRO P chucks.
- Clamping range h10 (nominal size only).

30 9369/9371/9374/9377/9380 – With **seal** for through-coolant feed (for use up to 100 bar). **Similar to** ISO 15488-A.
30 9372/9375/9378/9381 – With **seal** for through-coolant feed (for use up to 100 bar) and **spray nozzles.**
Similar to ISO 15488-A.



30 9378


30 9377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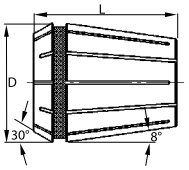


Nominal clamping ∅ d	39Y 30 9365	39Y 30 9368	33F 30 9369	39Y 30 9370	33F 30 9371	33F 30 9372	39Y 30 9373	33F 30 9374	33F 30 9375
	HP collet								
			with seal		with seal	with seal and spray nozzles		with seal	with seal and spray nozzles
mm	ER 8	ER 11	ER 11	ER 16	ER 16	ER 16	ER 25	ER 25	ER 25
1	XXX	XXX	–	XXX	–	–	–	–	–
2	XXX	XXX	–	XXX	–	–	XXX	–	–
3	XXX	XXX	XXX	XXX	XXX	–	XXX	XXX	–
4	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
5	XXX	XXX	XXX	XXX	XXX	–	XXX	XXX	–
6	–	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
7	–	XXX	–	XXX	XXX	–	XXX	(XXX)	–
8	–	–	–	XXX	XXX	XXX	XXX	XXX	XXX
9	–	–	–	XXX	(XXX)	–	XXX	XXX	–
10	–	–	–	XXX	XXX	–	XXX	XXX	XXX
11	–	–	–	–	–	–	XXX	(XXX)	–
12	–	–	–	–	–	–	XXX	XXX	XXX
13	–	–	–	–	–	–	(XXX)	(XXX)	–
14	–	–	–	–	–	–	XXX	XXX	(XXX)
15	–	–	–	–	–	–	(XXX)	(XXX)	–
16	–	–	–	–	–	–	XXX	XXX	–
Type	4004 E	4008 E	4012 E	426 E	425 E	425 E	430 E	429 E	429 E
∅ D mm	8.5	11.5	11.2	17	16.7	16.7	26	25.7	25.7
L mm	13.6	18	18	27.5	27.5	27.5	34	34	34

30 9365

High concentricity and repetition accuracy due to optimum design.

Nominal clamping ∅ d	39Y 30 9376	33F 30 9377	33F 30 9378	39Y 30 9379	33F 30 9380	33F 30 9381
	HP collet					
		with seal	with seal and spray nozzles		with seal	with seal and spray nozzles
mm	ER 32	ER 32	ER 32	ER 40	ER 40	ER 40
2	XXX	–	–	–	–	–
3	XXX	XXX	–	XXX	–	–
4	XXX	XXX	XXX	(XXX)	–	–
5	XXX	XXX	–	(XXX)	–	–
6	XXX	XXX	XXX	(XXX)	(XXX)	–
7	(XXX)	XXX	–	(XXX)	–	–
8	XXX	XXX	XXX	(XXX)	(XXX)	–
9	XXX	XXX	–	(XXX)	–	–
10	XXX	XXX	XXX	XXX	(XXX)	XXX
11	XXX	XXX	–	(XXX)	–	–
12	XXX	XXX	XXX	(XXX)	(XXX)	XXX
13	(XXX)	(XXX)	–	(XXX)	–	–
14	XXX	XXX	XXX	(XXX)	(XXX)	–
15	(XXX)	(XXX)	–	(XXX)	–	–
16	XXX	XXX	XXX	XXX	(XXX)	XXX
17	(XXX)	(XXX)	–	(XXX)	–	–
18	XXX	XXX	XXX	(XXX)	(XXX)	–
19	(XXX)	XXX	–	(XXX)	–	–
20	XXX	XXX	XXX	XXX	(XXX)	XXX
21	–	–	–	(XXX)	–	–
22	–	–	–	(XXX)	(XXX)	–
23	–	–	–	(XXX)	–	–
24	–	–	–	(XXX)	–	–
25	–	–	–	XXX	(XXX)	XXX
26	–	–	–	(XXX)	–	–
Type	470 E	469 E	469 E	472 E	471 E	471 E
∅ D mm	33	32.7	32.7	41	40.7	40.7
L mm	40	40	40	46	46	46

30 9396

	39Y 30 9390	33F 30 9391	39Y 30 9393	33F 30 9394	39Y 30 9396	33F 30 9397
	HP collet set					
	(3; 4; 5; 6; 8; 10 mm), 426 E	with seal (3; 4; 5; 6; 8; 10 mm), 425 E	(4; 6; 8; 10; 12; 14; 16 mm) 430 E	with seal (4; 6; 8; 10; 12; 14; 16 mm) 429 E	(4; 6; 8; 10; 12; 14; 16; 20 mm), 470 E	with seal (4; 6; 8; 10; 12; 14; 16; 20 mm), 469 E
	ER 16	ER 16	ER 25	ER 25	ER 32	ER 32
	(XXX)	XXX	(XXX)	XXX	(XXX)	XXX

FAHRION® PRAZISION

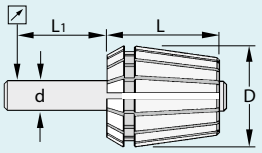
ER collets – Quality features

DIN 6499 B

d mm via	d mm to	L_1 mm	DIN classes 2	DIN classes 1	HOLEX	FAHRION quality Standard	FAHRION quality HP
1.0	1.6	6	0.015	0.010	0.010	0.005	0.002
1.6	3.0	10					
3.0	7.0	16					
7.0	10.0	25					
10.0	18.0	40	0.020	0.015			
18.0	25.0	50					
25.0	34.0	60	0.025	0.020	0.010	0.012	–

Advantage „super finish“ and polished:

- Better corrosion resistance.
- More contact area.
- Increased rigidity and clamping force.
- Higher precision and system concentricity.
- FAHRION with corrosion protection FAHRION protect for all types.



Standard

FAHRION® PRAZISION

Standard collets for tapping – with axial compensation

30 9425

Collet for thread tapping, similar to DIN 6499 / ISO 15488, Form CET-GB, concentricity 20 µm.

Suitable for: All standard ER collet chucks.

Note: Clamps only the nominal ∅. **Not compatible with the CENTRO P precision ER collet chuck.**

Nominal clamping ∅ d		34F 30 9425	34F 30 9430	34F 30 9432
		ET collet for thread tapping, with axial compensation		
mm		ET 16	ET 25	ET 32
2,8		(87.12)	(91.08)	–
3,5		(87.12)	(91.08)	–
4,5		(87.12)	(91.08)	(97.02)
6		(87.12)	(91.08)	(97.02)
7		–	(91.08)	(97.02)
8		–	(91.08)	(97.02)
9		–	(91.08)	(97.02)
10		–	(91.08)	(97.02)
11		–	–	(97.02)
12		–	–	(97.02)
Type		4033 E	4285 E	4538 E
∅ D	mm	17	26	33
L	mm	27	34	43
Axial range	mm	7	8	10

Standard

HOLEX®

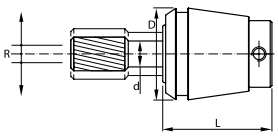
Standard collet for tapping and reaming – with radial compensation

30 9447

Hardened and ground.

Suitable for: All standard ER collet chucks.

Note: Clamps only the nominal ∅. **Not compatible with the CENTRO P precision ER collet chuck.**



Nominal clamping ∅ d		32Z 30 9445	32Z 30 9447	32Z 30 9448	32Z 30 9449
		ET collet with radial compensation for tapping and reaming			
mm		ET 16	ET 25	ET 32	ET 40
2		65.70	–	–	–
2,8		65.70	–	–	–
3		65.70	76.32	–	–
3,5		65.70	76.32	–	–
4		65.70	76.32	86.94	–
4,5		65.70	76.32	86.94	–
5		65.70	76.32	86.94	–
6		65.70	76.32	86.94	–
7		–	76.32	86.94	–
8		–	76.32	86.94	97.20
9		–	76.32	86.94	97.20
10		–	76.32	86.94	97.20
11		–	–	86.94	97.20
12		–	–	86.94	97.20
14		–	–	86.94	97.20
16		–	–	–	97.20
∅ D	mm	17	26	33	41
L	mm	29	35	42.5	49
Axial compensation	mm	0.1	0.1	0.1	0.2
Radial compensation R thread tapping	mm	0.3	0.4	0.5	0.5
Radial compensation R reaming	mm	0.05	0.05	0.1	0.1

ISO 15488-A ≤10µm

ER collets for thread tapping – with square socket drive

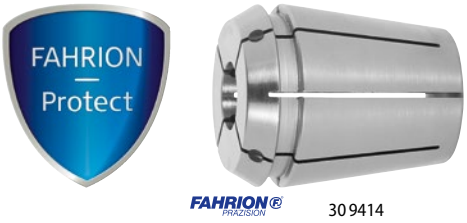
With square socket drive for positive engagement of the tap.
30 9399/9403/9411/9416 – With sealing plugs for through coolant supply (up to 70 bar!).
30 9402/9406/9409/9414/9419 – With sealing plugs for through coolant supply (up to 100 bar!).
30 9402/9404/9406/9409/9413/9414/9418/9419 – **FAHRION® corrosion protection:**

- Collet completely coated, including the mating faces.
- This increases the service life of the collet and ensures full functionality and precision.

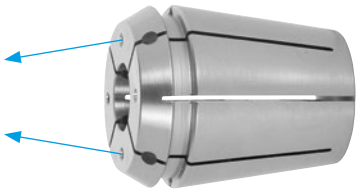
30 9404/9413/9418 – With sealing plugs for through coolant supply (up to 100 bar!) and spray nozzles.

Suitable for: All standard ER collet chucks, FAHRION collets also for the Centro P precision ER collet chuck.

Note:
30 9399 Size 2,5; 2,8 – Without seal.
30 9402/9404/9406/9409/9413/9414/9418/9419 – **FAHRION®** collets similar to ISO 15488-A.



FAHRION® PRAZISION 30 9414


FAHRION® PRAZISION 30 9418

HOLEX 30 9411

Nominal clamping ∅ d			mm	2,5	2,8	3,5	4	4,5	6	7	8	9	10	Type	∅ D mm	L mm
32Z 30 9399	HOLEX	ER collet for machine taps	ER11	XXX	XXX	XXX	XXX	XXX	XXX	–	–	–	–	4031 E	11.3	18
39Y 30 9402	FAHRION® PRAZISION	ER collet for machine taps with seal	ER 16	–	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	–	4031 E	16.7	27.5
32Z 30 9403	HOLEX		ER 16	–	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	–	4031 E	16.7	27.5
39Y 30 9406	FAHRION® PRAZISION		ER 20	–	–	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	4276 E	20.7	31.5
39Y 30 9409			ER 25	–	–	–	–	XXX	XXX	XXX	XXX	XXX	XXX	4282 E	25.7	34
32Z 30 9411	HOLEX		ER 25	–	–	–	–	XXX	XXX	XXX	XXX	XXX	XXX	4282 E	25.7	34
39Y 30 9414	FAHRION® PRAZISION		ER 32	–	–	–	–	XXX	XXX	XXX	XXX	XXX	XXX	4537 E	32.7	40
32Z 30 9416	HOLEX		ER 32	–	–	–	–	XXX	XXX	XXX	XXX	XXX	XXX	4537 E	32.7	40
39Y 30 9419			ER 40	–	–	–	–	–	XXX	XXX	XXX	XXX	XXX	4716 E	40.7	46
39Y 30 9404	FAHRION® PRAZISION	ER collet for machine taps with seal and spray nozzles	ER 16	–	–	XXX	–	XXX	XXX	XXX	XXX	–	–	4031 E	16.7	27.5
39Y 30 9413			ER 25	–	–	–	–	XXX	XXX	XXX	XXX	XXX	XXX	4282 E	25.7	34
39Y 30 9418			ER 32	–	–	–	–	XXX	XXX	XXX	XXX	XXX	XXX	4537 E	32.7	40

Nominal clamping ∅ d			mm	11	12	14	16	18	20	22	25	Type	∅ D mm	L mm
39Y 30 9409	FAHRION® PRAZISION	ER collet for machine taps with seal	ER 25	XXX	XXX	XXX	XXX	–	–	–	–	4282 E	25.7	34
32Z 30 9411	HOLEX		ER 25	XXX	XXX	XXX	XXX	–	–	–	–	4282 E	25.7	34
39Y 30 9414	FAHRION® PRAZISION		ER 32	XXX	XXX	XXX	XXX	XXX	XXX	–	–	4537 E	32.7	40
32Z 30 9416	HOLEX		ER 32	XXX	XXX	XXX	XXX	XXX	XXX	–	–	4537 E	32.7	40
39Y 30 9419			ER 40	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	4716 E	40.7	46
39Y 30 9413	FAHRION® PRAZISION	ER collet for machine taps with seal and spray nozzles	ER 25	XXX	XXX	XXX	–	–	–	–	–	4282 E	25.7	34
39Y 30 9418			ER 32	XXX	XXX	XXX	XXX	XXX	XXX	–	–	4537 E	32.7	40

HOLEX ER collets for thread tapping – with quick-release chuck

- The tap is clamping by a recirculating ball clamping mechanism.
- Integral quick-change device.
- Collets for thread tapping, similar to DIN 6499 / ISO 15488.

Suitable for: All standard ER collet chucks.

Advantage: Quick locking/unlocking by spring mechanism. No screw clamping required on the square drive flats of the tap.

Note: Clamps only the nominal ∅. **Not compatible with the CENTRO P precision ER collet chuck.**

30 9457

Nominal clamping ∅ d		mm	3,5	4	4,5	6	7	8	9	10	11	12	14	∅ D mm	L mm	
32Z 30 9455	ER collet for machine taps	ER 16	XXX	XXX	XXX	XXX	–	–	–	–	–	–	–	16	32.5	new
32Z 30 9457		ER 25	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	–	–	–	25	40	new
32Z 30 9458		ER 32	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	32	49	new

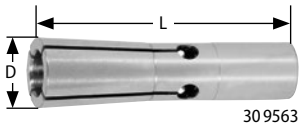
Collets, extra slim (micro-machining, for toolmaking and mould-making)

Through hardened and ground. Extremely slim design. The collet is drawn into the taper seating by a **threaded connection** from behind through the chuck. **Reduced distortion** due to elimination of the clamping nut.

Suitable for:

30 9563 – Extra-slim collet chucks No. 300782 / 0784 / 4972 / 4974.

30 9572/9573 – Extra-slim collet chucks No. 300782 / 0784 / 4972 / 4974.



30 9563

30 9572

Nominal clamping ∅ d			mm	1	2	3	4	5	6	∅ D mm	L mm	
31A 30 9563	Garant	Extra slim collet		–	XXX	XXX	XXX	XXX	XXX	9.6	36	new
34F 30 9572	ALBRECHT Präzisions Spannfutter	Extra slim collet **Through-coolant**		XXX	XXX	XXX	XXX	XXX	XXX	10.1	50	new
34F 30 9573		Extra slim collet **sealed**		XXX	XXX	XXX	XXX	XXX	XXX	10.1	50	new

ALBRECHT Präzisions Spannfutter ER collet adaptor/extra slim collet

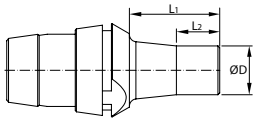
Fully hardened and ground. Adaption of standard ER collets to extra slim collets No. 309572 and 309573.

Advantage: **Reduced interference contours** permit machining even where access to the component is difficult.

Application: For use on lathes with static or driven tools, and also on ER collet chucks.

30 9571

for ER collet		25	32	∅ D mm	L_1 mm	L_2 mm	
34F 30 9571	ER adapter / extra-slim collet	XXX	XXX	13.5	25	12	new



Collet for heavy-duty chuck

Cylindrical collet or reducing adapter.

30 9566/9570 – For **Holex** heavy-duty chucks No. 300775, 300778, 302865, 302870, 305525, 305528. With length adjustment.

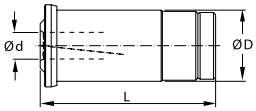
30 9575–9578 – For **NT** heavy-duty chucks No. 300785, 300787, 302861, 302862, 305535, 305538.

30 9575/9576 – **Sealed system, suitable for internal coolant feed.**

30 9577/9578 – Coolant grooves on the inner bore d, thus suitable for peripheral cooling.

30 9581/9582 – For **Holex** slim heavy-duty chucks No. 300788, 302879, 305539.

30 9566

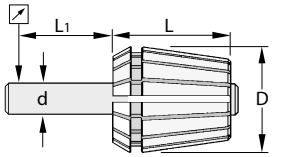


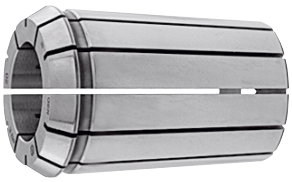
Nominal clamping ∅ d			mm	3	4	6	8	10	12	14	16	18	20	25
33K 30 9575	NT TOOL	Collet for heavy-duty chuck	∅ 20 mm	–	–	XXX	XXX	XXX	XXX	(XXX)	XXX	–	–	–
33K 30 9576			∅ 32 mm	–	–	XXX	XXX	XXX	XXX	(XXX)	XXX	(XXX)	XXX	XXX
33K 30 9577			∅ 20 mm	–	–	XXX	XXX	XXX	XXX	–	XXX	–	–	–
33K 30 9578			∅ 32 mm	–	–	XXX	XXX	XXX	XXX	–	XXX	–	XXX	XXX
32A 30 9566	HOLEX		∅ 20 mm	–	–	XXX	XXX	XXX	XXX	XXX	XXX	–	–	–
32A 30 9570			∅ 32 mm	–	–	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
32A 30 9581		Collet for slim heavy-duty chuck	∅ 12 mm	XXX	XXX	XXX	XXX	–	–	–	–	–	–	–
32A 30 9582			∅ 20 mm	–	–	XXX	XXX	XXX	XXX	–	XXX	–	–	–

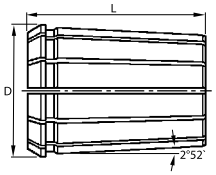
ISO 10897

FAHRION® PRÄZISION OZ collets – accessories

Spring steel, through hardened and ground. The through bore (longer clamping range than DIN collets) increases the clamping force. More slits than DIN collets, giving a greater insertion depth in the collet chuck. Suitable for jobber drills, for clamping on the guide land.
Clamping range = Nominal size down to minus 0.5 mm. 5 or 6 slits each end.







Nominal clamping Ø d		39Y 30 9540	39Y 30 9550	39Y 30 9560
		OZ collet for chuck		
mm		2 - 16 mm	2 - 25 mm	4 - 32 mm
4		XXX	XXX	–
5		XXX	XXX	–
6		XXX	XXX	–
7		XXX	XXX	–
8		XXX	XXX	–
9		XXX	XXX	–
10		XXX	XXX	XXX
11		(XXX)	XXX	–
12		XXX	XXX	XXX
13		(XXX)	XXX	–
14		XXX	XXX	XXX
15		(XXX)	XXX	–
16		XXX	XXX	XXX
17		–	XXX	–
18		–	XXX	XXX
19		–	XXX	–
20		–	XXX	XXX
21		–	XXX	–
22		–	XXX	XXX
23		–	XXX	–
24		–	XXX	–
25		–	XXX	XXX
28		–	–	XXX
30		–	–	XXX
32		–	–	XXX
Type		415 E	462 E	467 E
Ø D	mm	25.5	35.05	43.7
L	mm	40	52	60

OZ collet set for OZ collet chucks

Supplied with: OZ collets (No. 309550) Ø 5–16 mm (in 1 mm increments) and Ø 18, 20, and 25 mm, in a wooden box.

39Z 30 9562	OZ collet set type 462 E 15 pieces, **for chucks 5–25 mm**	XXX

30 9562

ALBRECHT Präzisions Spannfutter Balancing screws set

Application: For manual (re-)balancing. 9 different sizes in fine increments, colour-coded. Suitable for all type of chuck with tapped hole for balancing screws.
Supplied with: 20 pieces each of 9 screw sizes, screwdriver for Torx® TX15.

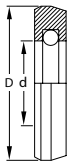
30 9906

Number of screws		180
34F 30 9906	Balancing screws set	XXX
Thread size		M6

gewitec Sealing rings for ER clamping nuts

Suitable for: ER clamping nuts No. 309615 / 9621 / 9652.

Note:
- Clamping range = nominal size – 0.5 mm.
- Clamping Ø 1 mm increments.
- When ordering, please specify the required clamping Ø with order!
- Suitable for up to 80 bar.
- Installation situation: Labelling on the inner face of clamping nuts.



30 9625

30 9625 _SET

Clamping Ø d		mm	3...10	3...13	11...16	17...20	21...26	SATZ	Set contents	Ø D mm
39Z 30 9625	Sealing ring for 309615 / 309652 / 309621	ER 16	XXX	–	–	–	–	XXX	7	13
39Z 30 9627		ER 20	–	XXX	–	–	–	–	–	16
39Z 30 9630		ER 25	XXX	–	XXX	–	–	XXX	13	21
39Z 30 9635	Sealing ring for 309615 / 309621	ER 32	XXX	–	XXX	XXX	–	XXX	17	27
39Z 30 9645		ER 40	XXX	–	XXX	XXX	XXX	XXX	23	33.5

Accessories for toolholders – clamping nuts

ER clamping nuts

DIN 6499 D

Thread and taper ground in a single setup for highest concentricity.

- 30 9612 – With plain bearings, delivering lower friction and higher clamping force.
- 30 9617 – Surface smoothly coated, ball-bearing mounted. Low coefficient of friction, high clamping forces.
- 30 9618 – Slim, symmetrical design.
- 30 9619 – 6 screws allow the radial run-out to be reduced to zero.
- 30 9621 – Internal clamping nut with an external thread.

30 9580 Size 25–40 – **With slots.**

30 9610 Size 11 – **With hexagon** 17 AF.

30 9610/9615 – Nut coated for: lower friction and **increased clamping force** coupled with high wear resistance and corrosion resistance.

30 9615/9621 – Sealing rings No. 309625 / 9630 / 9635 / 9645.

30 9580 Size 16; 20 – **With hexagon** 25 AF.

Suitable for:

- 30 9617 – Precision ER mini collet chuck, see No. 300642 / 0643 / 2843 / 2844 / 5523 / 5524.
- 30 9618 – Precision ER collet chuck, see No. 300643 / 2839 / 2844 / 5518 / 5524.
- 30 9619 – Ideally suitable for lathes, both for stationary and driven tools.
- 30 9621 – ER collet chucks with internal thread.

30 9580–9615/9619 – All standard ER collet chucks.

Optional extras:

309580/309610/309612/309615/309617/309619/309621/ – ER clamping wrench, No. 309680 – 309740. Single open ended spanner (for size 16), No. 613300 size 25.

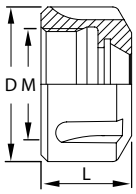
30 9618 – ER chuck key No. 309757 / 9758.

Note: Collet chuck and clamping nut are balanced separately!

30 9619 – Up to 6000 rpm.

30 9610_11-20

30 9610_25-40



G 2.5 25000 min^{-1}

30 9612

30 9617

G 6.3 15000 min^{-1}

30 9621_25

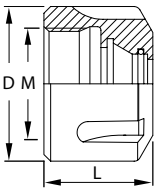
30 9619

30 9618

30 9615_16

30 9615_25

for ER			11	11M (new)	16	16M (new)	20	25	32	40
32Z 30 9580	HOLEX	ER clamping nut	–	–	XXX	–	XXX	XXX	XXX	XXX
31Z 30 9610	Garant	ER clamping nut **High Speed**	XXX	–	XXX	–	–	XXX	XXX	XXX
31Z 30 9612	Garant	ER plain bearing clamping nut	–	–	XXX	–	–	XXX	XXX	XXX
39Z 30 9615	gewitec	ER clamping nut **for sealing rings**	–	–	XXX	–	XXX	XXX	XXX	XXX
31Z 30 9617	Garant	ER clamping nut **for precision collet chucks**	–	–	XXX	–	–	XXX	XXX	XXX
31Z 30 9618	Garant	ER mini mono-nut **for precision collet chucks**	–	XXX	–	XXX	–	–	–	–
33E 30 9619	EWS	ER clamping nut **with radial run-out adjustment**	–	–	XXX	–	–	XXX	XXX	XXX
31Z 30 9621	Garant	ER clamping nut **Internal**	–	–	XXX	–	–	XXX	XXX	XXX
L (30 9580, 30 9610, 30 9618)		mm	12	19.1	18	21.6	19.5	21	23	26
L (30 9612)		mm	–	–	18	–	–	20.5	23	26
L (30 9615)		mm	–	–	22.5	–	19.5	25	27.5	30.5
L (30 9617)		mm	–	–	20.6	–	–	24	26	29
L (30 9619)		mm	–	–	21	–	–	21.8	23	27.5
L (30 9621)		mm	–	–	11	–	–	14.5	17.5	20
∅ D (30 9580, 30 9610, 30 9615, 30 9618)		mm	19	16	28	24	34	42	50	63
∅ D (30 9612)		mm	–	–	32	–	–	42	50	63
∅ D (30 9617)		mm	–	–	33.5	–	–	44	51.8	61.9
∅ D (30 9619)		mm	–	–	34	–	–	50	63	78
∅ D (30 9621)		mm	–	–	24	–	–	32	40	50
Thread (30 9580, 30 9610, 30 9612, 30 9615, 30 9618, 30 9619)			M14×0.75	M20×1	M22×1.5	M24×0.75	M25×1.5	M32×1.5	M40×1.5	M50×1.5
Thread (30 9621)			–	–	M24×1	–	–	M32×1.5	M40×1.5	M50×1.5
maximum tightening torque (30 9580, 30 9610, 30 9612, 30 9618)		N·m	40	20	80	30	110	140	180	240
maximum tightening torque (30 9615)		N·m	–	–	80	–	100	140	180	240
maximum tightening torque (30 9617)		N·m	–	–	54	–	–	101	136	169
maximum tightening torque (30 9621)		N·m	–	–	40	–	–	55	70	120

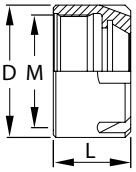


Clamping nuts Mini - for ER collet chucks

DIN 6499 | G 2.5 25000 min^{-1} | HSC

Small external dimensions, case-hardened and ground on all faces.

Suitable for: ER collet chuck mini, see No. 300650 / 0652 / 0665 / 0685 / 5710 / 5712 / 5715.



30 9650

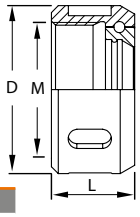
for ER			8	11	16	20	25
31Z 30 9650	Garant	ER Mini clamping nut	XXX	XXX	XXX	XXX	XXX
31Z 30 9652	Garant	ER Mini clamping nut for sealing rings	–	–	XXX	XXX	XXX
L (30 9650)		mm	11	12	18	19.5	21
L (30 9652)		mm	–	–	22.5	24	25
∅ D		mm	12	16	22	28	35
Thread			M10×0.75	M13×0.75	M19×1	M24×1	M30×1
maximum tightening torque		N·m	12	25	35	40	45

Clamping nuts for OZ collet chucks

DIN 6388 D | G 2.5 25000 min^{-1}

- With ball-bearing thrust collar for higher clamping forces and improved radial run-out characteristics.

Suitable for: OZ collet chucks, see No. 300695 / 0710 / 0750 / 0770 / 2460 / 2462 / 2880.



30 9670

Clamping chuck clamping range			2-16	2-25	4-32
31Z 30 9670	Garant	OZ clamping nut	XXX	XXX	XXX
L		mm	24	30	33.5
∅ D		mm	43	60	72
Thread			M33×1.5	M48×2	M60×2.5
maximum tightening torque		N·m	100	180	220

FAHRION® PRAZISION Accessories for CENTRO P – ER clamping nut and sealing washer

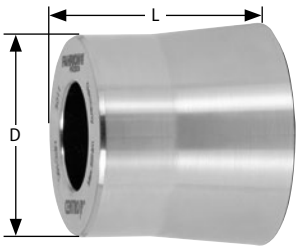
Note: **FAHRION system** ER clamping nuts type CP and sealing rings type HP **do not fit on to other systems!**

Mini – size 11M, 16M and 16MDI.

Mini = all sizes with **"M",** extremely slim design.
MiniSlim = sizes with **"MS",** extremely super slim design.
Conical = all sizes with **"C".**
Standard = all other sizes.
With trapezoidal thread for high clamping forces. Extra long double guidance of the ER clamping nut. ER clamping nuts coated for reduction of **friction.**

Suitable for: **FAHRION ER collet chuck CENTRO P.**

Optional extras: Sealing rings No. 309666 – 309668. Clamping wrenches No. 309754 – 309756. HP collets No. 309349 – 309359.



Tapered – size 16C and 16CDI.

Type CP for ER			8M	11M	16MS	16C	16	25	32	40
34F 30 9655		ER clamping nut CP **Standard**	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
Clamping range		mm	1 – 5	1 – 7	1 – 10	1 – 10	1 – 10	2 – 16	2 – 20	3 – 26
L		mm	12	16.2	20.9	23.2	23.4	25.6	26.9	31.5
∅ D		mm	10	16	22	24	30	40	50	63
maximum tightening torque		N·m	8	10	30	55	55	90	140	200

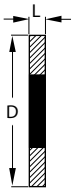
Standard – size 16, 25, 32, and size 16DI, 25DI, 32DI

Type CP for ER			16MSDI	16CDI	16DI	25DI	32DI	40DI
34F 30 9665		ER clamping nut CP **for HP sealing rings**	XXX	XXX	XXX	XXX	XXX	XXX
Clamping range		mm	1 – 10	1 – 10	1 – 10	2 – 16	2 – 20	3 – 26
L		mm	23.9	26.2	26.4	28.9	30.1	34.8
∅ D		mm	22	24	30	40	50	63
maximum tightening torque		N·m	30	55	55	90	140	200

Sealing rings HP – for ER clamping nuts CP

Vulcanised sealing rings up to 80 bar.
0.5 mm collet ∅ clamping range (+ 0.4 / – 0.1).

Note:
- Sealing rings in 0.5 mm increments on request.
- Sealing rings for No. 309665 DI40 on request.



30 9668

Clamping ∅ (1 mm increments)			mm	1	2	3...10	11...16	17...20	∅ D mm	L mm
34F 30 9666	CP sealing ring	DI16		(XXX)	(XXX)	XXX	–	–	12.6	2
34F 30 9668	CP sealing ring	DI32		–	(XXX)	XXX	XXX	XXX	26.2	2

HOLEX Wrench for heavy-duty chuck, slim

Suitable for: Heavy-duty chucks, slim, No. 300788, 302879 and 305539.

30 9747

Type		S10	S16	S20
32A 30 9747	Wrench	XXX	XXX	XXX
∅ D	mm	30	38	44

Accessories for arbors – ER special collets

Chuck key for ER collet chucks — Standard

30 9680/9740 – For an **uncontrolled** tightening torque.
30 9700/9720/9745 – For a **controlled** tightening torque using a torque wrench (14×18 / 1/2 inch or 9×12)

30 9680

30 9700

30 9720

30 9740

30 9745

for ER collet chuck		8	11	16	20	25	32	40
35A 30 9680	ER chuck key	–	–	XXX	–	XXX	XXX	XXX
35A 30 9700	ER chuck key **1/2 inch socket**	–	–	XXX	–	XXX	XXX	XXX
35A 30 9720	ER chuck key **1/2 inch 25AF**	–	–	(XXX)	–	–	–	–
33F 30 9740	Wrench for ER Mini nuts	XXX	XXX	XXX	XXX	XXX	–	–
39Z 30 9745	Torque insert for ER mini-nuts	XXX	XXX	XXX	XXX	XXX	–	–
overall length (30 9680)	mm	–	–	163	–	203	253	285.5
∅ D (30 9740)	mm	13	17	22.5	28	36	–	–
suitable torque wrench 656050 (30 9700, 30 9720)		–	–	200	–	200	200	200
Plug-in shank ☐ (30 9745)	mm	9×12	9×12	9×12	9×12	9×12	–	–

Clamping wrench for precision ER collet chucks

Special clamping wrench.
For **standard** nuts No. 309655 / 9665 size 16, 25, 32 and 16DI, 25DI, 32DI.

Suitable for: 30 9754/9756 – **FAHRION** ER collet chuck CENTRO P.
30 9754/9756 Size 16C – ER clamping nut CP No. 309655 size 16C and 16M.
30 9757/9758 – HiRunER Mini GARANT precision collet chuck.

Note: Size M for the mini version.

30 9754

Type		8M	11M	16M	16MS	16C	16	25	32	40
34F 30 9754	CP roller bearing wrench	XXX	XXX	–	XXX	XXX	XXX	XXX	XXX	XXX
34F 30 9756	CP roller bearing wrench for torque wrenches	–	XXX	–	XXX	XXX	XXX	XXX	XXX	(XXX)
new 31T 30 9757	HiRunER roller bearing wrench	–	XXX	XXX	–	–	–	–	–	–
new 31A 30 9758	HiRunER roller bearing wrench for torque wrench	–	XXX	XXX	–	–	–	–	–	–
Plug-in shank ☐ (30 9756, 30 9758)	mm	–	9×12	9×12	9×12	9×12	14×18	14×18	14×18	14×18
suitable torque wrench 656055 (30 9756, 30 9758)		–	60	60	60	60	200	200	200	200

Clamping wrench for precision ER collet chucks HiRunER — HiRunER

Special clamping wrench. For precision collet chucks No. 309617 size 16, 25, 32 and 40.

Suitable for: GARANT HiRunER precision ER collet chuck.

30 9748

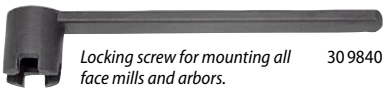
30 9749

Type		16	25	32	40
31A 30 9748	HiRunER clamping wrench	XXX	XXX	XXX	XXX
31A 30 9749	HiRunER clamping wrench for torque wrench	XXX	XXX	XXX	XXX
Plug-in shank ☐ (30 9749)	inch	1/2			
suitable torque wrench 656050 (30 9749)		60-1/2	200	200	200

Accessories for arbors – for combination mandrels, HSK and PSC

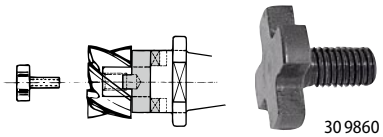
Suitable for: HSK and combination face mill adaptors

for mandrel ∅		mm	13	16	22	27	32	40	50	60
35A 30 9840	AMF Toggle spanner	DIN 6368	XXX	XXX	XXX	XXX	XXX	XXX	XXX	(XXX)
overall length		mm	160	180	200	225	250	280	315	355
suitable for cutter lock screw			M6	M8	M10	M12	M16	M20	M24	M30



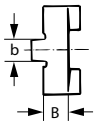
Locking screw for mounting all face mills and arbors. 30 9840

for mandrel ∅		mm	13	16	22	27	32	40	50	60
39Z 30 9860	Milling cutter lock screw	DIN 6367	XXX	XXX	XXX	XXX	XXX	XXX	XXX	(XXX)
Thread M			M6	M8	M10	M12	M16	M20	M24	M30
Thread length		mm	12	16	18	22	26	30	36	45
Head ∅		mm	17	20	28	35	42	52	63	75
Head thickness		mm	5	6	7	8	9	10	12	14



30 9860

for mandrel ∅		mm	13	16	22	27	32	40
39Z 30 9870	Face mill drive ring	DIN 6366	(XXX)	XXX	XXX	XXX	XXX	XXX
B-0.2		mm	10	10	12	12	14	14
b		mm	8	8	10	12	14	16

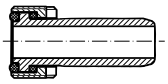


30 9870

HSK – Coolant tube and wrench

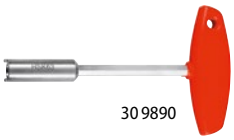
30 9880 – Special O-ring up to 120 bar, angular movement from ± 1°, polished, with 2 sealing rings.

for HSK		25	32	40	50	63	80	100
39Z 30 9880	HSK coolant tube	XXX	XXX	XXX	XXX	XXX	XXX	XXX



30 9880

for HSK		25	32	40	50	63	80	100
39Z 30 9890	Wrench for coolant tubes	XXX	XXX	XXX	XXX	XXX	XXX	XXX



30 9890

PSC coolant tube and wrench

for PSC		40	50	63
39Z 30 9885	PSC coolant tube	XXX	XXX	XXX

30 9885

		40	50	63
39Z 30 9893	Wrench for coolant tubes	XXX	XXX	XXX

30 9893

Accessories for arbors – spare clamping screw

Suitable for: Side lock and Whistle Notch arbors.

Note: Up to 20 mm clamping ∅ with one, from 25 mm clamping ∅ with 2 clamping screws.
Size 12 – **suitable also for chucks with clamping ∅ 14 mm.**
Size 16 – **suitable also for chucks with clamping ∅ 18 mm.**
Size 32 – **suitable also for chucks with clamping ∅ 40 mm.**

30 9900

for chucks with clamping ∅ D_1		mm	6	8	10	12	16	20	25	32
39Z 30 9900	Spare clamping screw		XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
Thread size			M6	M8	M10	M12	M14	M16	M18×2	M20×2
Length		mm	10	10	12	16	16	16	20	20

DIN 2084

Accessories for arbors – arbor spacer rings

Arbor spacer rings – narrow

0.03 to 1 mm wide. Cut from hardened strip steel.
Variation from the width b1 and its parallelism depends on the tolerance of the basic semi-finished product to DIN 1544.

30 9920

Inner ∅×thickness b1		mm	13×0,03	13×0,04	13×0,3	13×0,6	16×0,03	16×0,04	16×0,05	16×0,1	16×0,2	16×0,3	16×0,5	16×0,6	16×1
37D 30 9920	Arbor spacer ring	**narrow**	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
External ∅		mm	21	21	21	21	25	25	25	25	25	25	25	25	25

Inner ∅×thickness b1		mm	22×0,03	22×0,04	22×0,05	22×0,1	22×0,2	22×0,3	22×0,5	22×0,6	22×1
37D 30 9920	Arbor spacer ring	**narrow**	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
External ∅		mm	33								

Inner ∅×thickness b1		mm	27×0,03	27×0,04	27×0,05	27×0,1	27×0,2	27×0,3	27×0,5	27×0,6	27×1
37D 30 9920	Arbor spacer ring	**narrow**	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
External ∅		mm	39								

Inner ∅×thickness b1		mm	32×0,03	32×0,04	32×0,05	32×0,1	32×0,2	32×0,3	32×0,5	32×0,6	32×1
37D 30 9920	Arbor spacer ring	**narrow**	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
External ∅		mm	45								

Inner ∅×thickness b1		mm	40×0,03	40×0,04	40×0,05	40×0,1	40×0,2	40×0,3	40×0,5	40×0,6	40×1
37D 30 9920	Arbor spacer ring	**narrow**	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
External ∅		mm	54								

Arbor spacer rings – wide

2.0 – 60 mm wide. Made of case-hardening steel, hardened. External ∅ ground, flat surfaces lapped.
Permissible variation in parallelism for the width is IT 3, referred to bore dia. d1.
Tolerance of the ring width ± 0.1 mm.

30 9930

Inner ∅×thickness b1		mm	13×2	13×3	13×6	13×10	16×2	16×3	16×4	16×5	16×6	16×10	16×20	16×30
37D 30 9930	Arbor spacer ring	**wide**	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
External ∅		mm	22	22	22	22	27	27	27	27	27	27	27	27

Inner ∅×thickness b1		mm	22×2	22×3	22×4	22×5	22×6	22×10	22×20	22×30	22×60
37D 30 9930	Arbor spacer ring	**wide**	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
External ∅		mm	34								

Inner ∅×thickness b1		mm	27×2	27×3	27×4	27×5	27×6	27×10	27×20	27×30
37D 30 9930	Arbor spacer ring	**wide**	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
External ∅		mm	41							

Inner ∅×thickness b1		mm	32×2	32×3	32×4	32×5	32×6	32×10	32×20	32×30
37D 30 9930	Arbor spacer ring	**wide**	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
External ∅		mm	47							

Inner ∅×thickness b1		mm	40×2	40×3	40×4	40×5	40×6	40×10	40×20	40×30
37D 30 9930	Arbor spacer ring	**wide**	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
External ∅		mm	55							

Arbor spacer ring sets

Supplied with: Plastic wallet.
(Ring width mm / number of rings)
No. 309920 size 0.03/5; 0.04/5; 0.05/5; 0.1/6; 0.2/3; 0.3/3; 0.5/3; 0.6/2; 1/2; 1.5/1.

30 9940

Internal ∅		mm	16	22	27	32	40
37D 30 9940	Arbor spacer ring set **35 pieces**		XXX	XXX	XXX	XXX	XXX

Three-jaw lathe chucks / geared scroll chucks

- Manual chucks with gear scroll, centrically clamping.
- Body made of cast iron or steel.
- Gear scroll drop-forged, balanced, and hardened.
- Flanks of scroll and of jaw serrations are ground.
- High concentricity to DIN 6386, Part 1.

Supplied with: 1 clamping wrench and fastening screws or studs depending on the chuck.

Optional extras: **Spare and additional jaws** see No. 314000 – 315200.
Swarf protection see No. 312800.

Note: For self-centring three-jaw lathe chucks see No. 313110 - 313140.

See the information block for headstocks/DIN from page 1081

31 0100_125

With recessed mount

Standard: **DIN 6350 – Form A – Cushman system.**

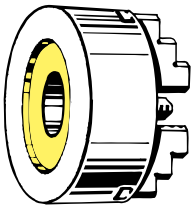
Application: For spindle noses with thread to DIN 800. The chuck is fitted to a flange from the rear by means of screws and this flange is then mounted on to the lathe spindle. The flange blanks must always be fitted first to the machine and then to the chuck.

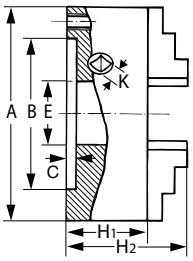
Supplied with:

31 0600 – Reversible jaws **with elliptical–bevelled teeth.**

31 0100/0500 – 1 set = 3 hard inside jaws, stepped on the outside and 1 set = 3 hard outside jaws, stepped on the inside.

Note: DIN6350 satisfies the international standard ISO702-4.





External ∅ A	31R 31 0600 Garant	36R 31 0100 RÖHM	36R 31 0500	Aperture E	Height without jaws H_1	Height with jaws H_2	Centring ∅ B	Centring depth C	Chuck key square K	Weight	maximum speed		
	Three-jaw lathe chuck with recessed steel mount	Three-jaw lathe chuck with recessed cast-iron mount	Three-jaw lathe chuck with recessed steel mount								31 0600	31 0100	31 0500
mm	DIN 6350	DIN 6350	DIN 6350	mm	mm	mm	mm	mm	mm	kg	rpm	rpm	rpm
80	–	–	XXX	19	39.5	53.5	56	3	6	1.3	–	–	7000
100	–	XXX	XXX	20	50	68	70	3	8	2.9	–	4500	6300
125	–	XXX	XXX	32	56	78.5	95	4	9	4.5	–	4000	5500
160	XXX	XXX	XXX	42	65	91	125	4	10	8.2	4000	3500	4600
200	XXX	XXX	XXX	55	73.5	106	160	4	11	14.6	3400	3000	4000
250	XXX	XXX	XXX	76	82	122	200	5	12	25.7	2700	2500	3000
315	–	XXX	(XXX)	103	95	141	260	5	14	44.2	–	2000	2300
400	–	–	(XXX)	136	105	148	330	5	17	80	–	–	1800
Colour code for accessories													

With short taper mount

Standard: **DIN 55027 and DIN 55029.**

Application: **The chuck is always fitted to the spindle nose directly without an intermediate flange.**

31 0670/0650 – For spindle noses DIN 55029 with **Camlock studs.**

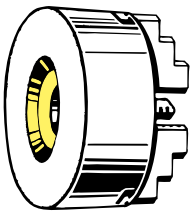
31 0750/0700 – For spindle noses DIN 55027 **with studs and collar nuts.**

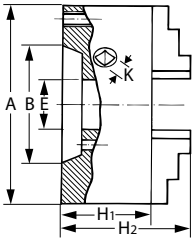
Supplied with:

31 0650/0700 – 1 set = 3 hard inside jaws, stepped on the outside and 1 set = 3 hard outside jaws, stepped on the inside.

31 0670/0750 – 1 set reversible jaws **with elliptical–bevelled serrations.**

Note: DIN 55027 satisfies the international standard ISO 702-3. DIN 55029 satisfies the international standard ISO 702-2.





Outer ∅ A / taper	31R 31 0670 Garant	31R 31 0750 Garant	36R 31 0650 RÖHM	36R 31 0700 RÖHM	Aperture E	Height without jaws H_1	Height with jaws H_2	Number of studs		Size of studs		Chuck key square K	Weight	maximum speed	
	Three-jaw lathe chuck steel short taper mount							31 0670 31 0650	31 0750 31 0700	31 0670 31 0650	31 0750 31 0700			31 0670 31 0750	31 0650 31 0700
mm	DIN 55029	DIN 55027	DIN 55029	DIN 55027	mm	mm	mm					mm	kg	rpm	rpm
125/4	–	–	–	XXX	32	69	93	–	3	–	M10	9	5.5	–	5500
160/4	XXX	–	(XXX)	XXX	42	66	92	3	3	7/16–20	M10	10	8.5	4000	4600
160/5	–	XXX	–	XXX	42	66	92	–	4	–	M10	10	8.5	4000	4600
200/5	–	–	(XXX)	XXX	55	74.5	107	6	4	1/2-20	M10	11	15.5	–	4000
200/6	XXX	XXX	(XXX)	XXX	55	74.5	107	6	4	5/8-18	M12	11	15.5	3400	4000
250/6	XXX	XXX	(XXX)	XXX	76	83	124	6	4	5/8-18	M12	12	30	2700	3000
250/8	–	–	(XXX)	XXX	76	83	124	6	4	3/4-16	M16	12	30	–	3000
315/6	–	–	–	(XXX)	103	96	142	–	4	–	M12	14	50	–	2300
315/8	–	–	(XXX)	(XXX)	103	96	142	6	4	3/4-16	M16	14	50	–	2300
Colour code for accessories															

Colour code: Röhm geared scroll chucks and jaws

Four-jaw lathe chuck / geared scroll chuck

- Gear scroll drop-forged, balanced, and hardened.
- Flanks of scroll and of jaw serrations are ground.
- High concentricity.

Supplied with: 1 set = 4 hardened inside jaws, stepped on the outside.
1 set = 4 hardened outside jaws, stepped on the inside.
1 clamping wrench and fastening screws or studs depending on the chuck.

Optional extras: **For spare and additional jaws** see No. 314100 – 315300.
For swarf protection see No. 312800.

31 2000_125

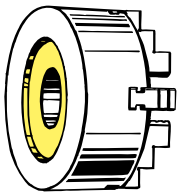
With recessed mount

31 2500 – Drop-forged, resulting in a long working life and **suitability for high speed machines.**

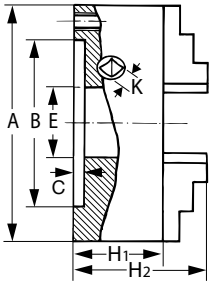
Standard: **DIN 6350 – Form A – Cushman system.**

Application: For spindle noses with thread to DIN 800. The chuck is fitted to a flange from the rear by means of screws and this flange is then mounted on to the lathe spindle. The flange blanks (see No. 317000) must always be adapted first to the machine and then to the lathe chuck.

Note: DIN 6350 satisfies the international standard ISO 702-4.



Recessed mount to DIN 6350 / 6351 (fastening screw from rear)



External ∅ A	36R 31 2000 Four-jaw lathe chuck with recessed cast-iron mount	36R 31 2500 Four-jaw lathe chuck with recessed steel mount	Aperture E	Height without jaws H_1	Height with jaws H_2	Centring ∅ B	Centring depth C	Chuck key square K	Weight	maximum speed	
										31 2000	31 2500
mm	DIN 6350	DIN 6350	mm	mm	mm	mm	mm	mm	kg	rpm	rpm
80	–	XXX	19	39.5	53.5	56	3	6	1.3	–	7000
100	XXX	XXX	20	50	68	70	3	8	2.9	4500	6300
125	XXX	(XXX)	32	56	78.5	95	4	9	4.5	4000	5500
160	XXX	XXX	42	65	91	125	4	10	8.2	3600	4600
200	XXX	XXX	55	73.5	106	160	4	11	14.6	3000	4000
250	XXX	XXX	76	82	122	200	5	12	25.7	2500	3000
315	(XXX)	(XXX)	103	95	141	260	5	14	44.2	2000	2300
Colour code for accessories											

With short taper mount

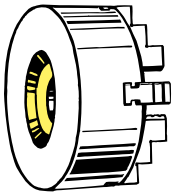
Drop-forged, resulting in a long working life and **suitability for high speed machines.**

Standard: **DIN 55027**

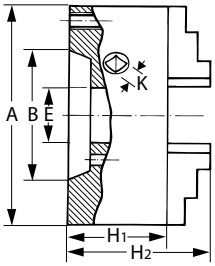
Material: Steel

Application: For spindle noses DIN 55027 with studs and collar nuts.
The chuck is always fitted to the spindle nose directly without an intermediate flange.

Note: DIN 55027 and international standard ISO 702-3 are identical to DIN 55022 (old standard).



Short taper mount to DIN 55027 (stud and flanged nut)

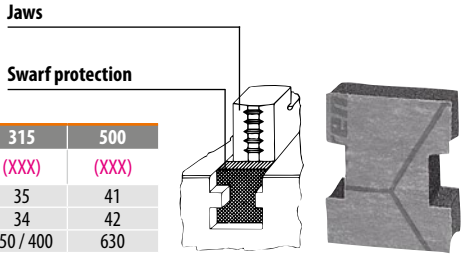


Outer ∅ A / taper	36R 31 2700 Four-jaw lathe chuck with short taper steel mount	Aperture E	Height without jaws H_1	Height with jaws H_2	Number of studs	Size of studs	Centring taper ∅ B	Chuck key square K	Weight	maximum speed
mm	DIN 55027	mm	mm	mm			mm	mm	kg	rpm
125/4	(XXX)	32	69	93	3	M10	63.525	9	5.5	5500
160/4	(XXX)	42	66	92	3	M10	63.525	10	8.5	4600
160/5	XXX	42	66	92	4	M10	82.575	10	8.5	4600
200/5	(XXX)	55	74.5	107	4	M10	82.575	11	15.5	4000
200/6	XXX	55	74.5	107	4	M12	106.39	11	15.5	4000
250/6	XXX	76	83	124	4	M12	106.39	12	30	3000
250/8	(XXX)	76	83	124	4	M16	139.735	12	30	3000
Colour code for accessories										

Swarf protection

Suitable for: Chuck No. 310100 – 310750 and 312000 – 312700.

Application: For insertion into jaw slides. Prevents ingress of swarf into chuck body.



for chuck type		160	200	250	315	500
36R 31 2800	Swarf protection piece	(XXX)	(XXX)	(XXX)	(XXX)	(XXX)
Length	mm	23	21	27	35	41
Width	mm	18	20	24	34	42
also suitable for chuck type	mm	140	–	–	350 / 400	630

Colour code: Röhm geared scroll chucks and jaws

Spare and additional jaws, geared scroll chucks

31 4400/4500 – **Precision milled** contact face, **not burnished.**

Suitable for:

31 4000/4400/4600/5000/5200 – **Three-jaw chucks No. 310100 / 0500 / 0600 / 0650 / 0670 / 0700 / 0750.**

31 4100/4500/4700/5100/5300 – **Four-jaw chucks No. 312000 / 2500 / 2700.**

Material:

31 4400–4700 – 16 MnCr5

Application:

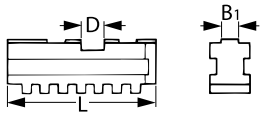
31 4000/4100 – For fitting hardened reversible jaws or soft top jaws.

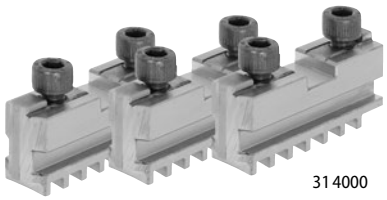
31 4400/4500 – For fitting to hardened base jaws.

Note:
- Jaws can generally be renewed in the chuck as long as the guide in the body is not worn out.
- Top, turning, and drilling jaws **bought subsequently must be ground in the chuck** for radial and axial run-out.

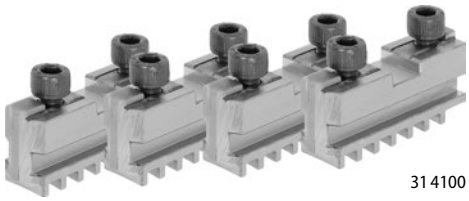
31 4400/4500 – Aluminium top jaws **on request.**

Base jaws hardened





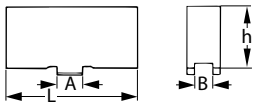
31 4000



31 4100

for chuck type	mm	100	125	140	160	200	250	315	350	suitable for colour code
36R 31 4000	Base jaw set, 3 pieces, hardened	XXX	XXX	XXX	XXX	XXX	XXX	XXX	(XXX)	
36R 31 4100	Base jaw set, 4 pieces, hardened	(XXX)	–	–	(XXX)	(XXX)	XXX	(XXX)	–	
L	mm	46	55	65	65	78	92	108	127	
D +0.01	mm	9.5	12.68	12.68	12.68	12.68	19.03	19.03	19.03	
B_1 –0.05	mm	7.94	7.94	7.94	7.94	7.94	12.7	12.7	12.7	
also suitable for chuck type	mm	–	–	–	–	–	–	–	400	
Thread		M6	M8	M8	M8	M8	M12	M12	M16	

Soft top jaws

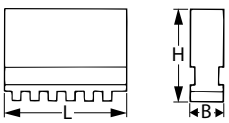


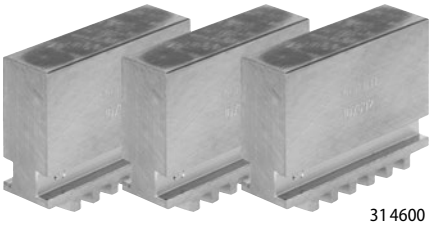
31 4400

31 4500

for chuck type	mm	100	125	140	200	250	315	350	suitable for colour code
36R 31 4400	Top jaw set, 3 pieces, soft	XXX	XXX	XXX	XXX	XXX	XXX	(XXX)	
36R 31 4500	Top jaw set, 4 pieces, soft	(XXX)	–	–	(XXX)	–	–	(XXX)	
L	mm	53	62	74	87	103	120	137	
H	mm	30	38	42	43	53	58	63	
D	mm	7.96	7.96	7.96	7.96	12.72	12.72	12.72	
b	mm	24	32	38.1	44.45	53.95	63.5	76.2	
A	mm	9.49	12.67	12.67	12.67	19.02	19.02	19.02	
also suitable for chuck type	mm	–	–	160	–	–	–	400	

Scroll jaws soft





31 4600

31 4700

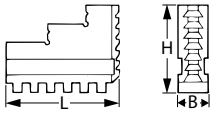
for chuck type	mm	80	100	125	140	160	200	250	315	350	500	suitable for colour code
36R 31 4600	Scroll jaw set, 3 pieces, soft	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	(XXX)	(XXX)	
36R 31 4700	Scroll jaw set, 4 pieces, soft	–	(XXX)	(XXX)	–	XXX	XXX	XXX	XXX	(XXX)	–	
L	mm	37	48	52	61	61	69	90	130	130	190	
B	mm	12	14	18	18	18	20	24	34	34	42	
H	mm	26	33.5	41.5	41.5	47.5	53.5	67.5	79.5	79.5	95	
also suitable for chuck type	mm	–	–	–	–	–	–	–	–	400	630	

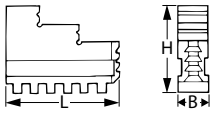
Colour code: Röhm geared scroll chucks and jaws

Spare inside and outside jaws, hardened

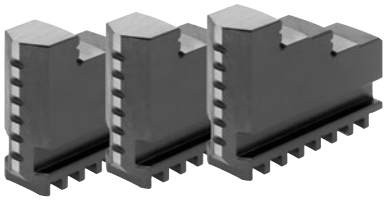
Application: Inside jaws

Application: Outside jaws

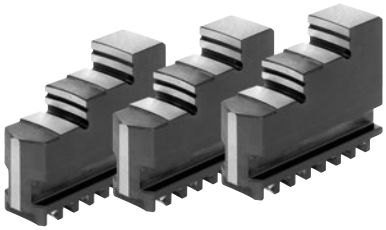




31 5000
31 5100



31 5200
31 5300



for chuck type		80	100	125	140	160	200	250	315	350	suitable for colour code
36R 31 5000	Inside jaw set, 3 pieces, hardened	XXX	XXX	XXX	(XXX)	XXX	XXX	XXX	XXX	–	
36R 31 5100	Inside jaw set, 4 pieces, hardened	–	–	–	–	(XXX)	(XXX)	(XXX)	–	–	
36R 31 5200	Outside jaw set, 3 pieces, hardened	–	XXX	XXX	–	XXX	XXX	XXX	(XXX)	(XXX)	
36R 31 5300	Outside jaw set, 4 pieces, hardened	–	–	–	–	–	(XXX)	(XXX)	–	–	
L	mm	37	48	52	61	61	69	90	130	130	
B	mm	12	14	18	18	18	20	24	34	34	
H	mm	26	33.5	41.5	41.5	47.5	53.5	67.5	79.5	79.5	
also suitable for chuck type	mm	–	–	–	–	–	–	–	–	400	

HOLEX Three-jaw lathe chuck / additional jaws (geared scroll chucks)

With recessed mount

- Manual chucks with gear scroll, centrically clamping.
- Body made of cast iron or steel.
- Gear scroll drop-forged, balanced, and hardened.
- Flanks of scroll and of jaw serrations are ground.
- High concentricity, more precise than DIN 6386 requirement.

Standard: **DIN 6350 – Form A – Cushman system.**

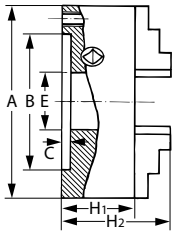
Application: For spindle noses with thread to DIN 800. The chuck is fitted to a flange from the rear by means of screws and this flange is then mounted on to the lathe spindle. The flange blanks must always be fitted first to the machine and then to the chuck.

Supplied with: Includes: 1 set = 3 hardened inside jaws, stepped on the outside.
1 set = 3 hardened outside jaws, stepped on the inside.
1 clamping wrench and fastening screws or studs depending on the chuck.

Optional extras: For **spare and additional jaws** see No. 312971 – 312991.

Rear face size 100

31 2906



External ∅ A	32W 31 2906	32W 31 2911	Aperture E		Height without jaws H_1		Height with jaws H_2		Centring ∅ B	Centring depth C	Weight	maximum speed	
	Three-jaw lathe chuck with recessed cast-iron mount	Three-jaw lathe chuck with recessed steel mount	31 2906	31 2911	31 2906	31 2911	31 2906	31 2911				31 2906	31 2911
mm	DIN 6350	DIN 6350	mm	mm	mm	mm	mm	mm	mm	mm	kg	rpm	rpm
80	XXX	XXX	16	16	44	44	57	57	56	3	1.5	5000	7000
100	XXX	XXX	20	20	50	50	67	67	70	3	2.8	4500	6300
125	XXX	XXX	32	35.5	56	59.5	76	79.5	95	4	5	4000	5500
160	XXX	XXX	42	42	64.5	68	96.5	100	125	4	10	3600	4600
200	XXX	XXX	55	55	75	78	104	107	160	4	17.5	3000	4000
250	XXX	XXX	76	76	85	89	119	123	200	5	29	2500	3500
315	XXX	XXX	103	103	94	97.2	137	140.2	260	5	50	2000	2800
Colour code for accessories													

Colour code: Röhm geared scroll chucks and jaws HOLEX geared scroll chucks and jaws

Other lathe chucks

A wide variety of other chucks such as face plates, oversize geared scroll chucks or special chucks are available on request from the Hoffmann Group

With short taper mount

- Manual chucks with gear scroll, centrically clamping.
- Body made of cast iron or steel.
- Gear scroll drop-forged, balanced, and hardened.
- Flanks of scroll and of jaw serrations are ground.
- High concentricity, more precise than DIN 6386 requirement.

Standard: **DIN 55027 and DIN 55029.**

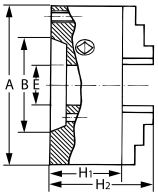
Application: **The chuck is always fitted to the spindle nose directly without an intermediate flange.**

31 2926 – For spindle noses DIN 55029 with **Camlock studs.**

31 2931 – For spindle noses DIN 55027 with **studs and collar nuts.**

Supplied with: Includes: 1 set = 3 hardened inside jaws, stepped on the outside.
1 set = 3 hardened outside jaws, stepped on the inside.
1 clamping wrench and fastening screws or studs depending on the chuck.

Optional extras: For **spare and additional jaws** see No. 312971 – 312991.

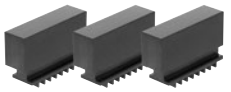


Rear face DIN 55029. 31 2926_200-6

Rear face DIN 55027. 31 2931_200-6

Outer ∅ A / taper	32W 31 2926	32W 31 2931	Aperture E	Height without jaws H_1	Height with jaws H_2	Weight	maximum speed
	Three-jaw lathe chuck steel short taper mount						
mm	DIN 55029	DIN 55027	mm	mm	mm	kg	rpm
160/5	–	XXX	42	68	100	9	4600
200/5	–	XXX	55	78	107	19	4000
200/6	XXX	XXX	55	78	107	19	4000
250/6	XXX	XXX	76	89	123	32	3500
250/8	XXX	XXX	76	89	123	32	3500
Colour code for accessories							

Additional jaws

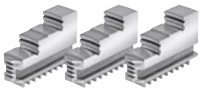


31 2971

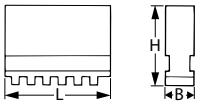
31 2976

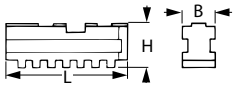
31 2981

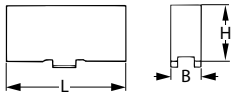
31 2986

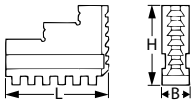


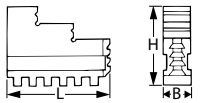
31 2991











for chuck type		80	100	125	160	200	250	315	suitable for colour code
32W 31 2971	Scroll jaw set, 3 pieces, soft	XXX	XXX	XXX	XXX	XXX	XXX	XXX	
32W 31 2976	Base jaw set, 3 pieces, hardened	–	–	XXX	XXX	XXX	XXX	XXX	
32W 31 2981	Top jaw set, 3 pieces, soft	–	–	XXX	XXX	XXX	XXX	XXX	
32W 31 2986	Inside jaw set, 3 pieces, hardened	XXX	XXX	XXX	XXX	XXX	XXX	XXX	
32W 31 2991	Outside jaw set, 3 pieces, hardened	XXX	XXX	XXX	XXX	XXX	XXX	XXX	
L (31 2971, 31 2986, 31 2991)	mm	32	42	51	70	85	105	125	
L (31 2976)	mm	–	–	54	65	79	92	110	
L (31 2981)	mm	–	–	64	78	90	106	120	
B (31 2971, 31 2976, 31 2986, 31 2991)	mm	11	15	20	20	25	28	32	
B (31 2981)	mm	–	–	22	25	27	32	37	
H (31 2971, 31 2986, 31 2991)	mm	28	32	40	53	54	63	73	
H (31 2976)	mm	–	–	28	29	33	36	40	
H (31 2981)	mm	–	–	38.5	41.5	43.5	51.5	55	
Thread (31 2976)		–	–	M8	M10	M10	M12	M12	

Colour code: HOLEX geared scroll chucks and jaws

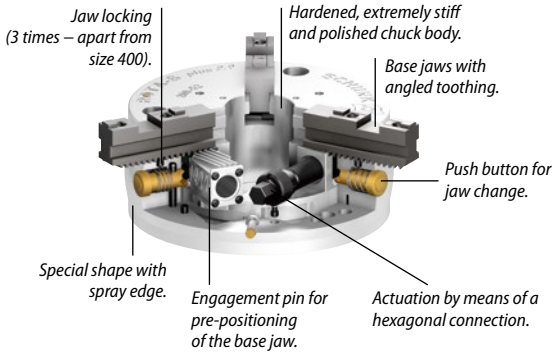
SCHUNK ROTA-S-plus 2.0 – self-centring three-jaw chucks

- Maximum concentricity and jaw exchange repeatability.
- Long service life with very high precision.
- Modular protective sleeve system.
- Very short set-up times.
- Chuck body case-hardened up to 315 mm ∅.
- Large aperture (dimension E!).
- Safety peg for maximum operator safety.
- **Base jaws compatible with chucks of the system "F" and system "Duro".**
- Flexible clamping of small and large components.
- High-precision clamping of very small internal ∅.

Material: Entirely made of steel, suitable for high speeds (see table).

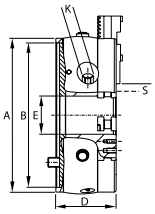
Supplied with: 1 safety chuck key and 1 set fastening screws.

Optional extras: **For spare and additional jaws** see No. 313200 – 313350.

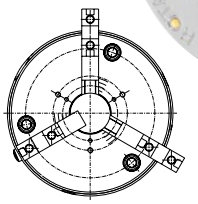


Protection again ingress of dirt thanks to self-centring system with wipers

Optimised lubrication system.



313117_250



With recessed mount

Standard: **DIN 6353 – Form A.**

Application: For spindle noses with thread to DIN 800. The chuck is fitted to a flange from the front by means of screws and this flange is then mounted on to the lathe spindle. The flange blanks must always be fitted first to the machine and then matched to the chuck.

Supplied with:

313115 – 1 set scroll stepped jaws.
313117 – 1 set base jaws and hard top jaws.

Type			160	200	250	315	400	Colour code for accessories
33U 31 3115	ROTA-S-plus 2.0 self-centring three-jaw chuck **with scroll stepped jaws**	DIN 6353	(XXX)	(XXX)	XXX	XXX	(XXX)	
33U 31 3117	ROTA-S-plus 2.0 self-centring three-jaw chuck **with base and hard top jaws**	DIN 6353	(XXX)	XXX	XXX	XXX	(XXX)	
Clamping range with external hard top jaws		mm	5 – 170	8 – 208	10 – 250	14 – 333	20 – 408	
Clamping range with internal hard top jaws		mm	65 – 186	72 – 224	92 – 252	95 – 326	137 – 408	
Clamping stroke per jaw S		mm	6.5	7	7.7	9.9	12	
∅ A		mm	165	206	256	323	408	
Aperture E		mm	42	52	62	92	102	
Chuck height D		mm	68.5	86.3	98	117	124	
Centring ∅ B		mm	145	185	235	300	380	
Chuck key hexagon socket K		mm	12	12	16	16	19	
Weight		kg	7.9	16.2	28.8	54.2	99	
maximum speed		rpm	5400	4800	4200	3400	2200	

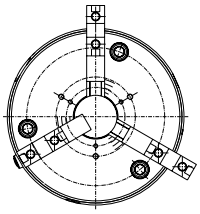
With short taper mount

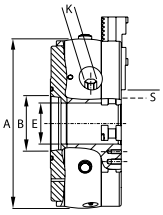
Standard: To **DIN 55027** and the international standard **ISO 702/III.**

Application: For spindle noses DIN 55027 with studs and collar nuts. The chuck is always fitted to the spindle nose directly without an intermediate flange.

Supplied with:

313135 – 1 set scroll stepped jaws.
313137 – 1 set base jaws and hard top jaws.





Type			160/5	200/5	200/6	250/6	250/8	315/6	315/8	Colour code for accessories
33U 31 3135	Self-centring three-jaw chuck ROTA-S 2.0 with short taper **and scroll stepped jaws**	DIN 55027	(XXX)	(XXX)	(XXX)	XXX	(XXX)	(XXX)	(XXX)	
33U 31 3137	Self-centring three-jaw chuck ROTA-S 2.0 with short taper **and base and hard top jaws**	DIN 55027	XXX	(XXX)	XXX	(XXX)	(XXX)	(XXX)	XXX	
Clamping range with external hard top jaws		mm	5 – 170	8 – 208	8 – 208	10 – 250	10 – 250	14 – 333	14 – 333	
Clamping range with internal hard top jaws		mm	65 – 186	72 – 224	72 – 224	92 – 252	92 – 252	95 – 326	95 – 326	
Clamping stroke per jaw S		mm	6.5	7	7	7.7	7.7	9.9	9.9	
∅ A		mm	165	206	206	256	256	323	323	
Aperture E		mm	42	52	52	62	62	92	92	
Centring taper ∅ B		mm	82.575	82.575	106.39	106.39	139.735	106.39	139.735	
Number of studs						4				
Size of studs			M10	M10	M12	M12	M16	M12	M16	
Chuck key hexagon socket K		mm	12	12	12	16	16	16	16	
Weight		kg	9.6	18.6	18.6	33.2	33.9	62.1	62.6	
maximum speed		rpm	5400	4800	4800	4200	4200	3400	3400	

Colour code: Schunk self-centring chucks and jaws

RÖHM DURO self-centring three-jaw scroll chuck

- Maximum concentricity and changeover accuracy.
- **With jaw retention, centrically clamping.**
- **Large pass-through diameter.**
- Accuracy twice that specified by DIN 6386.
- High clamping force with low force exertion.
- **Higher speeds thanks to safety blocking slide.**
- Jaws can quickly and easily be reversed or exchanged.
- **Outer contour with drop-off wedge for water.**
- **Grease nipple for greasing all sliding faces.**

Material: **Entirely made of steel, fully surface-hardened.**

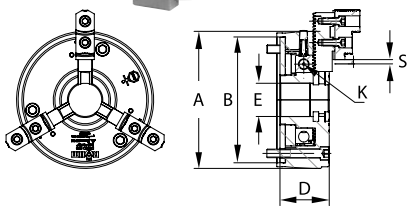
Advantage: Wherever extremely high clamping forces, high concentricity, and reliable continuous repeatability are required.

Supplied with: Includes: 1 set of jaws, 1 chuck key, 1 set fastening screws.

31 3110

With recessed mount

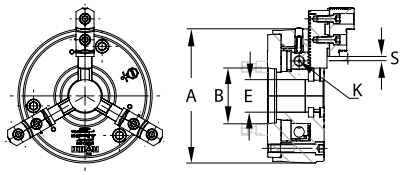
Application: For spindle noses with thread to DIN 800. The chuck is fitted to a flange from the front by means of screws and this flange is then mounted on to the lathe spindle. The flange blanks must always be fitted first to the machine and then to the chuck.



Type			160	200	250	315	Colour code for accessories
33R 31 3110	Self-centring lathe chuck **with one-piece reversible jaws**	DIN 6350	(XXX)	(XXX)	(XXX)	–	
33R 31 3120	Self-centring lathe chuck **with base and hard top jaws**	DIN 6350	(XXX)	XXX	XXX	(XXX)	
Clamping range with external hard top jaws		mm	5 – 161	7 – 207	8 – 253	12 – 323	
Clamping range with internal hard top jaws		mm	67 – 174	71 – 214	99 – 261	102 – 319	
Clamping stroke per jaw S		mm	6.2	6.8	8	10.2	
∅ A		mm	164	206	256	322	
Aperture E		mm	42	52	62	87	
Chuck height D		mm	63	81	92	111	
Centring ∅ B		mm	145	185	235	300	
Chuck key square socket K		mm	10	12	14	17	
Weight		kg	9.3	18.6	34.5	64	
maximum speed		rpm	5400	4600	4200	3300	

With short taper mount

Application: For spindle noses to DIN 55027 and to the international standard ISO 702/III. With studs and collar nuts. The chuck is always fitted to the spindle nose directly without an intermediate flange.

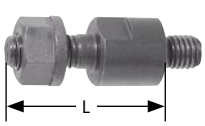


Type			160/5	200/5	200/6	250/6	250/8	315/8	Colour code for accessories
33R 31 3130	Self-centring lathe chuck **with one-piece reversible jaws**	DIN 55027	(XXX)	(XXX)	(XXX)	(XXX)	(XXX)	(XXX)	
33R 31 3140	Self-centring lathe chuck **with base and hard top jaws**	DIN 55027	XXX	(XXX)	(XXX)	(XXX)	(XXX)	(XXX)	
Clamping range with external hard top jaws		mm	5 – 161	7 – 207	7 – 207	8 – 253	8 – 253	12 – 323	
Clamping range with internal hard top jaws		mm	67 – 174	71 – 214	71 – 214	99 – 261	99 – 261	102 – 319	
Clamping stroke per jaw S		mm	6.2	6.8	6.8	8	8	10.2	
∅ A		mm	164	206	206	256	256	322	
Aperture E		mm	42	52	52	62	62	87	
Centring taper ∅ B		mm	82.563	82.563	106.375	106.375	139.719	139.719	
Number of studs			4						
Size of studs			M10	M10	M12	M12	M16	M16	
Chuck key square socket K		mm	10	12	12	14	14	17	
Weight		kg	8.7	16.5	16.5	33	33	60	
maximum speed		rpm	5400	4600	4600	4200	4200	3300	

RÖHM Spare studs and collar nuts

Suitable for: All lathe chucks and spindle noses with short taper arbor to DIN 55027.

for taper		4	5	6	8
33R 31 3050	Spare stud and collar nut	(XXX)	XXX	XXX	XXX
required quantity		3	4	4	4
Thread		M10	M10	M12	M16
L	mm	39	43	50	60



31 3050

Colour code: Röhm self-centring chucks and jaws

Spare and additional jaws – self-centring chucks

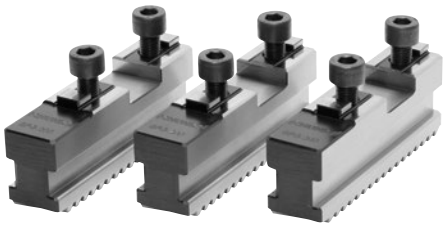
Application: As the jaws can be changed or adjusted to the required diameter **in just a few seconds,** it is useful to have several jaw sets on hand ready for use at the machine. **This minimises set-up times.** The jaw units consist for example of several sets of base jaws with soft top jaws, which can be machined out to the required diameters. This rationalisation method is not only necessary for NC machines but also important for every lathe type.

Base jaws hardened

Suitable for:

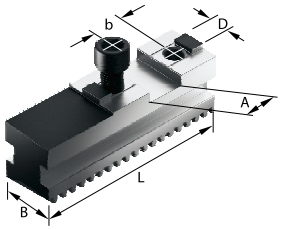
31 3200/3205 – Schunk self-centring chucks No. 313115 / 3117 / 3135 / 3137, Röhm self-centring chucks Duro No. 313110 / 3120 / 3130 / 3140 and other self-centring chuck systems.

Application: To accept hard or soft top jaws. Fastening screws for top jaws are supplied.



31 3205_200

for chuck type		160	200	250	315	400	suitable for colour code
33R 31 3200	Röhm Base jaw set, 3 pieces, **angled serrations**	XXX	XXX	XXX	XXX	XXX	■■
33T 31 3205	Schunk Base jaw set, 3 pieces, **angled serrations**	XXX	XXX	XXX	XXX	XXX	■■
33T 31 3207	Schunk Base jaw set, 3 pieces, **straight teeth**	XXX	XXX	XXX	XXX	XXX	–
L (31 3200, 31 3205)	mm	74	90	110	125	160	
L (31 3207)	mm	65	85	104	115	125	
B (31 3200, 31 3205)	mm	20	22	26	32	45	
B (31 3207)	mm	20	22	26	32	32	
A (31 3200, 31 3205)	mm	18	20	20	26	30	
A (31 3207)	mm	18	20	20	20	26	
b (31 3200, 31 3205)	mm	32	40	40	54	60	
b (31 3207)	mm	32	40	40	40	54	
D (31 3200, 31 3205)	mm	8	10	12	12	18	
D (31 3207)	mm	8	10	12	12	12	
also suitable for chuck type (31 3205)	mm	–	–	–	–	500	



Hard top jaws

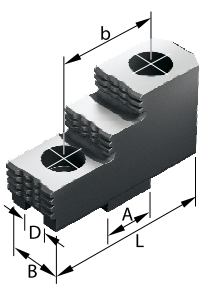
Suitable for: Schunk self-centring chucks No. 313115 / 3117 / 3135 / 3137, Röhm self-centring chucks Duro No. 313110 / 3120 / 3130 / 3140 and other self-centring chuck systems.

Application: For fitting to hardened base jaws. Applicable as reversible jaws in conjunction with the base jaws.

Note: ■ **Hard top and stepped jaws purchased subsequently must be ground internally in the chuck for concentricity and run-out.**

31 3210

for chuck type		160	200	250	315	400	suitable for colour code
33T 31 3210	Schunk Hardened top jaw set, 3 pieces	XXX	XXX	XXX	XXX	(XXX)	■■
33R 31 3250	Röhm Hardened top jaw set, 3 pieces	(XXX)	XXX	XXX	XXX	(XXX)	■■
L (31 3210)	mm	63	71.7	90	105	130	
L (31 3250)	mm	63	72	92	107	130	
B (31 3210)	mm	20	22	30	36	45	
B (31 3250)	mm	20	24	34	36	50	
D	mm	8	10	12	12	18	
b	mm	32	40	40	54	60	
A	mm	18	20	20	26	30	



Colour code: ■ Röhm self-centring chucks and jaws ■ Schunk self-centring chucks and jaws

Soft top jaws

31 3220 – Unstepped, for boring out to individual clamping ∅. **Precision milled** contact face, **burnished.**

31 3300/3310 – Unstepped, for boring out to individual clamping ∅. **Precision milled** contact face, **not burnished.**

Suitable for: Schunk self-centring chucks No. 313115 / 3117 / 3135 / 3137, Röhm self-centring chucks Duro No. 313110 / 3120 / 3130 / 3140 and other self-centring chuck systems.

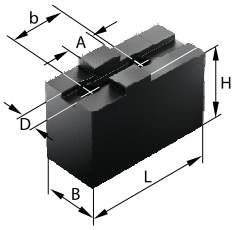
Material: Quality product made of 16MnCr5.

Application: For fitting to hardened base jaws. For clamping irregularly shaped or already machined components which have to be protected against damage. The jaws are machined according to the contours of the component.

Note: Aluminium top jaws **on request.**

31 3220

for chuck type		160	200	250	315	400	suitable for colour code
33T **31 3220**	SCHUNK	XXX	XXX	XXX	XXX	XXX	
33R **31 3300**	RÖHM Soft top jaw set, 3 pieces	XXX	XXX	XXX	XXX	XXX	
32R **31 3310**	HOLEX	XXX	XXX	XXX	XXX	XXX	
L mm		85	105	125	145	180	
B (31 3220) mm		20	22	30	35	50	
B (31 3300) mm		20.3	22	30	34.3	50.5	
H (31 3220) mm		36	43	50.5	54	73	
H (31 3300, 31 3310) mm		36.5	40	50	50	73	
D mm		8	10	12	12	18	
b mm		32	40	40	54	60	
A mm		18	20	20	26	30	
also suitable for chuck type (31 3220) mm		–	–	–	–	500	

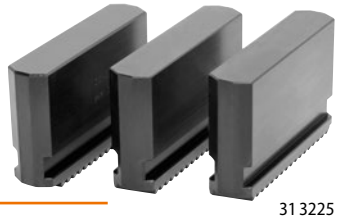


Soft unstepped jaws

Serrations hardened and ground.

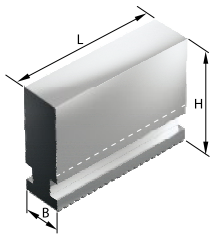
Suitable for: Schunk self-centring chucks No. 313115 / 3117 / 3135 / 3137, Röhm self-centring chucks Duro No. 313110 / 3120 / 3130 / 3140 and other self-centring chuck systems.

Material: C45, annealed



31 3225

for chuck type		160	200	250	315	400	suitable for colour code
33T **31 3225**	SCHUNK Soft scroll jaw set, 3 pieces **angled serrations**	XXX	XXX	XXX	XXX	(XXX)	
33T **31 3227**	SCHUNK Soft scroll jaw set, 3 pieces **straight teeth**	XXX	XXX	XXX	XXX	(XXX)	–
L (31 3225) mm		79	94	115	140	176	
L (31 3227) mm		65	84	99	121	148	
B (31 3225) mm		20	22	26	32	45	
B (31 3227) mm		20	22	26	32	32	
H (31 3225) mm		45	60	70	81	93	
H (31 3227) mm		55.5	65	84	90	100	



Claw jaws

Suitable for: Schunk self-centring chucks No. 313115 / 3117 / 3135 / 3137, Röhm self-centring chucks Duro No. 313110 / 3120 / 3130 / 3140 and other self-centring chuck systems.

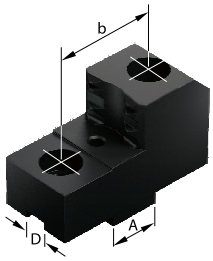
Material: Quality product made of 16MnCr5, hardened.

Application: For external clamping, ideally suited to clamping blanks.

Note: Example of clamping range of No. 313115 - 313137.

31 3231

Type			1	2	3	4	D mm	b mm	A mm	suitable for colour code
33T **31 3230**	SCHUNK Claw jaws set, 3 pieces, for chucks	∅ 160 mm	(XXX)	(XXX)	–	(XXX)	8	32	18	
33T **31 3231**		∅ 200 mm	XXX	XXX	–	XXX	10	40	20	
33T **31 3232**		∅ 250 mm	XXX	XXX	–	XXX	12	40	20	
33T **31 3233**		∅ 315 mm	XXX	–	XXX	–	12	54	26	
33T **31 3234**		∅ 400 mm	XXX	XXX	–	–	18	60	30	
Clamping range (31 3230)		mm	51 – 86	63 – 134	–	114 – 150				
Clamping range (31 3231)		mm	34 – 99	64 – 175	–	144 – 210				
Clamping range (31 3232)		mm	31 – 101	78 – 234	–	186 – 267				
Clamping range (31 3233)		mm	44 – 211	–	119 – 320	–				
Clamping range (31 3234)		mm	49 – 168	122 – 388	–	–				



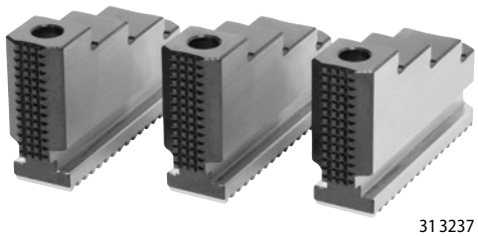
Colour code: Röhm self-centring chucks and jaws Schunk self-centring chucks and jaws

Scroll stepped jaws, hardened

Suitable for: Schunk self-centring chucks No. 313115 / 3117 / 3135 / 3137, Röhm self-centring chucks Duro No. 313110 / 3120 / 3130 / 3140 and other self-centring chuck systems.

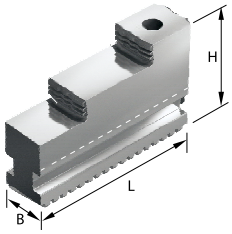
Application: For turning or drilling.

Note:
- **Hard top and stepped jaws purchased subsequently must be ground internally in the chuck for concentricity and run-out.**
- **Please check the serrations when matching to lathe chucks.**



31 3237

for chuck type			160	200	250	315	400	suitable for colour code
33T **31 3235**	SCHUNK	Stepped jaws set, 3 pieces, **angled serrations**	XXX	XXX	XXX	XXX	(XXX)	
33T **31 3237**	SCHUNK	Stepped jaws set, 3 pieces, **straight teeth**	(XXX)	XXX	XXX	XXX	(XXX)	–
33R **31 3350**	RÖHM	Scroll stepped jaw set, 3 pieces	(XXX)	XXX	XXX	(XXX)	–	
L (31 3235, 31 3350)		mm	79	94	114	129	167	
L (31 3237)		mm	66.6	84.8	107.4	136.4	136.4	
B (31 3235, 31 3350)		mm	20	22	26	32	45	
B (31 3237)		mm	20	22	26	32	32	
H (31 3235, 31 3350)		mm	45	60	70	81	93	
H (31 3237)		mm	46	54	65	70	70	
Version			3-step	3-step	2-step	2-step	2-step	

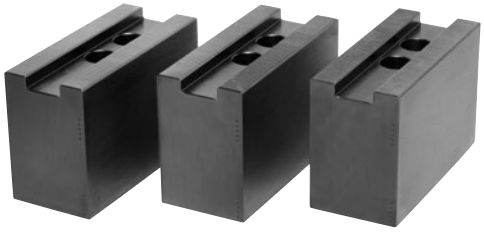


Clamping jaws with sharp serrations 1/16 inch ×90°

Suitable for: **Heavy-duty chucks** from Schunk, Röhm and other heavy-duty chuck manufacturers.

Optional extras: T-nuts No. 313505 – 313605.

Note:
- **When fitting to a chuck, please check serrations, slot width (D), and hole spacing (a, b).**
- Aluminium top jaws **on request.**

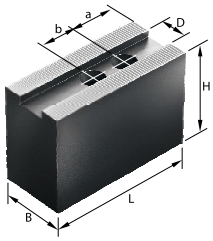


31 3415_210

Soft top jaws, standard, serrations 90°

31 3400 – **Precision milled** slots and serrations, **burnished.**
31 3415 – **Precision milled** slots and **precision ground** serrations, **burnished.**
31 3430 – **Precision milled** slots and serrations, **not burnished.**

Material: Quality product made of 16MnCr5.



for chuck type			160	165	200	210	250	400
33R **31 3400**	RÖHM		XXX	–	XXX	–	XXX	–
33T **31 3415**	SCHUNK	Top jaws set, 3 pieces	–	XXX	–	XXX	XXX	–
32R **31 3430**	HOLEX		XXX	–	XXX	–	XXX	XXX
L (31 3400, 31 3430)		mm	67	–	75	–	95	130
L (31 3415)		mm	–	70	–	90	120	–
B (31 3400, 31 3430)		mm	36	–	36	–	45	50
B (31 3415)		mm	–	40	–	40	50	–
H (31 3400, 31 3430)		mm	53	–	53	–	54	80
H (31 3415)		mm	–	60	–	60	80	–
a (31 3400, 31 3430)		mm	12	–	12	–	15	20
a (31 3415)		mm	–	15	–	25	30	–
b (31 3400, 31 3430)		mm	19	–	19	–	25	31
b (31 3415)		mm	–	22	–	22	28	–
D		mm	17	17	17	17	21	25.5
for thread DIN 912			M12	M12	M12	M12	M16	M20
also suitable for chuck type		mm	–	–	–	–	315	500 / 630

Colour code: Röhm self-centring chucks and jaws — Schunk self-centring chucks and jaws

Soft top jaws, long, serrations 90°

Bevelled for small clamping ∅.

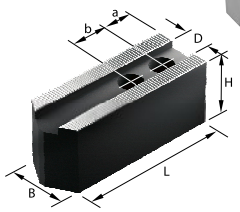
31 3450 – **Precision milled** slots and serrations, **burnished.**

31 3455 – **Precision milled** slots and **precision ground** serrations, **burnished.**

31 3460 – **Precision milled** slots and serrations, **not burnished.**

Material: Quality product made of 16MnCr5.

31 3455_210



for chuck type		160	165	200	210	250	315
33R 31 3450	RÖHM	(XXX)	–	XXX	–	(XXX)	XXX
33T 31 3455	SCHUNK Top jaws set, 3 pieces	–	XXX	–	XXX	XXX	XXX
32R 31 3460	HOLEX	XXX	–	XXX	–	XXX	–
L	mm	78	80	98	98	120	140
B	mm	35	35	35	35	50	50
H	mm	40	40	40	40	50	50
a	mm	15	15	15	15	20	30
b	mm	22	20	22	22	28	28
D	mm	17	14	17	17	21	21
for thread DIN 912		M12	M10	M12	M12	M16	M16

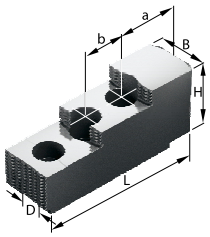
Hard stepped top jaws, serrations 90°

Precision milled slots and **precision ground** serrations, **burnished.**
Hardened.

Material: Quality product made of 16MnCr5.

Application: For external and internal clamping.

31 3470_210



for chuck type		165	210	250	315
33T 31 3470	SCHUNK Stepped top jaws set, 3 pieces	XXX	XXX	XXX	(XXX)
L	mm	72.5	84.3	103.5	128
B	mm	40	40	50	50
H	mm	49	49	58	58
a	mm	18	28.7	34	46
b	mm	19	19	25	30
D	mm	17	17	21	21

Soft segment jaws, serrations 90°

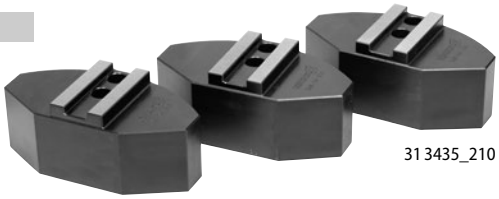
Precision milled slots and **precision ground** serrations, **burnished.**

Material:

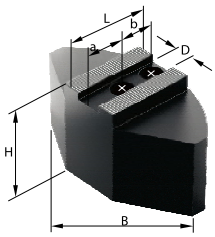
31 3435 – Quality product made of 16MnCr5.

31 3437 – Aluminium

Application: All-round low-distortion clamping.



31 3435_210

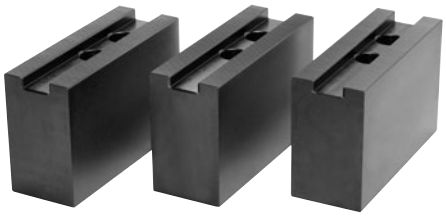


for chuck type		165	210	250	315
33T 31 3435	SCHUNK Segment jaws set, 3 pieces, **Steel**	XXX	XXX	XXX	(XXX)
33T 31 3437	SCHUNK Segment jaws set, 3 pieces, **Aluminium**	XXX	XXX	XXX	(XXX)
L (31 3435)	mm	59.5	69.5	80	110
L (31 3437)	mm	59.5	72.5	87.5	117
B	mm	120	140	180	240
H (31 3435)	mm	60	60	70	70
H (31 3437)	mm	58	58	78	78
a (31 3435)	mm	25	35	30	60
a (31 3437)	mm	22	35	40	70
b	mm	22	22	28	28
D	mm	17	17	21	21

Soft top jaws with sharp serrations 1.5 mm×60°

Suitable for: **Heavy-duty chucks** from Schunk, Röhm and other heavy-duty chuck manufacturers.
Material: Quality product made of 16MnCr5.
Optional extras: T-nuts No. 313505 – 313605.

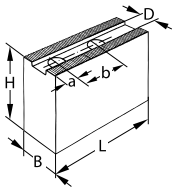
Note:
- **When fitting to a chuck, please check serrations, slot width (D), and hole spacing (a, b).**
- Aluminium top jaws **on request.**



313715_210

Soft top jaws, standard, serrations 1.5×60°

31 3700 – **Precision milled** slots and serrations, **burnished.**
31 3710 – **Precision milled** slots and serrations.
31 3715 – **Precision milled** slots and **precision ground** serrations, **burnished.**

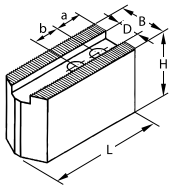


for chuck type		165	170	210	250	254	315	315/21	suitable for colour code
33R 31 3700	RÖHM	–	XXX	XXX	–	XXX	(XXX)	–	
32R 31 3710	HOLEX Top jaws set, 3 pieces	–	XXX	XXX	–	XXX	XXX	XXX	
33T 31 3715	SCHUNK	XXX	–	XXX	XXX	–	XXX	XXX	
L (31 3700, 31 3710)	mm	–	72	95	–	110	130	130	
L (31 3715)	mm	72	–	95	110	–	130	129	
B	mm	32	32	35	40	50	50	50	
H (31 3700, 31 3710)	mm	–	40	45	–	45	50	58	
H (31 3715)	mm	32	–	40	42	–	50	60	
a	mm	15	15	24	30	30	40	39	
b	mm	20	20	25	30	30	30	30	
D	mm	12	12	14	16	16	18	21	
for thread DIN 912		M10	M10	M12	M12	M12	M14	M16	

Soft top jaws, long, serrations 1.5×60°

Bevelled for small clamping ∅.

31 3750 – **Precision milled** slots and serrations, **burnished.**
31 3755 – **Precision milled** slots and **precision ground** serrations, **burnished.**
31 3760 – **Precision milled** slots and serrations.

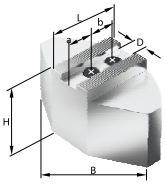


313755_210

for chuck type		165	170	210	250	254	315	315/21	suitable for colour code
33R 31 3750	RÖHM	–	XXX	XXX	–	XXX	(XXX)	–	
33T 31 3755	SCHUNK Top jaws set, 3 pieces	XXX	–	XXX	XXX	–	XXX	XXX	
32R 31 3760	HOLEX	–	XXX	XXX	–	XXX	XXX	–	
L	mm	82	82	102	125	125	145	145	
B	mm	32	31	35	42	40	50	50	
H	mm	32	32	40	40	40	50	50	
a	mm	15	15	20	30	30	30	30	
b	mm	20	20	25	30	30	30	30	
D	mm	12	12	14	16	16	18	21	
for thread DIN 912		M10	M10	M12	M12	M12	M14	M16	

Soft segment jaws, serrations 1.5 × 60°

Precision milled slots and **precision ground** serrations.
Application: All-round low-distortion clamping.



313737_210

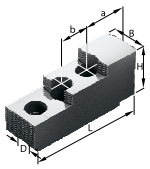
for chuck type		165	210	250	315	suitable for colour code
33T 31 3737	SCHUNK Segment jaws set, 3 pieces, **Aluminium**	XXX	XXX	XXX	(XXX)	
L	mm	59.5	72.5	87.5	117	
B	mm	120	140	180	240	
H	mm	58	58	80	78	
a	mm	25	35	40	40	
b	mm	20	25	30	30	
D	mm	12	14	16	18	

Colour code: Schunk heavy-duty chucks and jaws

Hard stepped top jaws, serrations 1.5 × 60°

Precision milled slots and **precision ground** serrations, **burnished.**
Hardened.

Application: For external and internal clamping.



31 3770_210

for chuck type		165	210	250	315	suitable for colour code
33T **31 3770**	SCHUNK Stepped top jaws set 3-piece	XXX	XXX	XXX	(XXX)	
L	mm	67	87	101.5	106	
B	mm	28	35	40	50	
H	mm	36	51	54	62	
a	mm	14	15.5	25.5	26	
b	mm	20	25	30	30	
D	mm	12	14	16	21	

Fastening screws for hard and soft top jaws

for chuck type		160/200	250	315	suitable for colour code
33R **31 3420**	Fastening screw for hard and soft top jaws	XXX	XXX	XXX	
Thread		M8x1	M12×1,5	M12×1,5	
Length	mm	20	30	35	

31 3420

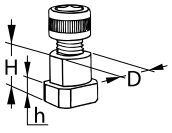
T-nuts

Precision ground, quenched, and tempered.

Suitable for: All **popular heavy-duty chucks manufactured by** Schunk, Forkardt, Röhm, and SMW (with sharp serrations).

Supplied with: Socket head screws DIN 912 - 12.9!

Note: Other T-nuts available ex works.



31 3505_17

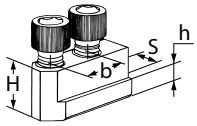
Slot width D	mm	17	21	25,5	Suitable for:
33T **31 3505**	SCHUNK	XXX	–	–	Forkardt: NH 160-200, NHF 160-200 Schunk: TH/THF 165-210, HSL 165-210 SMW: HFKS 160-200, HFK 160-200
33R **31 3520**	RÖHM	XXX	–	–	Röhm: KFD 160-200
33T **31 3555**	SCHUNK T-nut annealed	–	XXX	–	Forkardt: NH 250-315, NHF 250-315 Schunk: TH/THF 250-315, HSL 250-315 SMW: HFKS 250-315, HFK 250-315
33R **31 3570**	RÖHM	–	XXX	–	Röhm: KFD 250-315, KFH 250-315
33T **31 3605**	SCHUNK	–	–	XXX	Forkardt: NH 400-500; NHF 400-500 Schunk: TH/THF 380-500, HSL 400 SMW: HFKS 400, HFK 400-500
maximum tightening torque	N·m	70	150	220	
Thread G		M12	M16	M20	
H (31 3505, 31 3555, 31 3605)	mm	23	27	29	
H (31 3520, 31 3570)	mm	21.7	25.5	–	
h (31 3505, 31 3555, 31 3605)	mm	9	11.5	11	
h (31 3520, 31 3570)	mm	9.5	11	–	

SCHUNK T-nuts suitable for Schunk and Röhm chucks

Precision ground, quenched, and tempered.

Supplied with: Socket head screws DIN 912 - 12.9!

Note: Other T-nuts available ex works.



31 3805_18

Slot width S	mm	12	14	16	18	21
33T **31 3805**	T-nut annealed	XXX	XXX	XXX	XXX	XXX
maximum tightening torque	N·m	50	70	70	130	150
Thread G		M10	M12	M12	M14	M16
b	mm	20	25	30	30	30
S	mm	12	14	16	18	21
H	mm	18.5	20.5	21.5	33.5	28
h	mm	7.5	8.5	8.5	13.5	11.5
suitable for Röhm KFD-HE		170	210	254	315	315 / 21

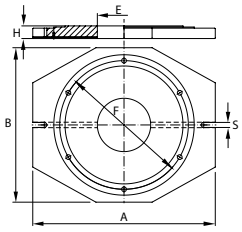
Colour code: Schunk heavy-duty chucks and jaws; Schunk self-centring chucks and jaws; Röhm self-centring chucks and jaws

BISON Base plates

Swivel base with longitudinal tenon slot for fast and exact alignment of the vice. Clamping slots for easy fitting to the machine table.

Application: For attachment of lathe chucks with recessed mount to DIN 6350.

Supplied with: T-nuts, fastening screws.



31 3910

for chuck type	36B 31 3910	Length A	Width B	Height H	Slot width S	Pitch circle diameter F	Aperture E	Total weight
mm	Base plate	mm	mm	mm	mm	mm	mm	kg
160	XXX	250	190	28	14	140	90	4.8
200	XXX	300	234	32	18	176	130	7.5
250	XXX	354	292	32	18	224	147	11.5

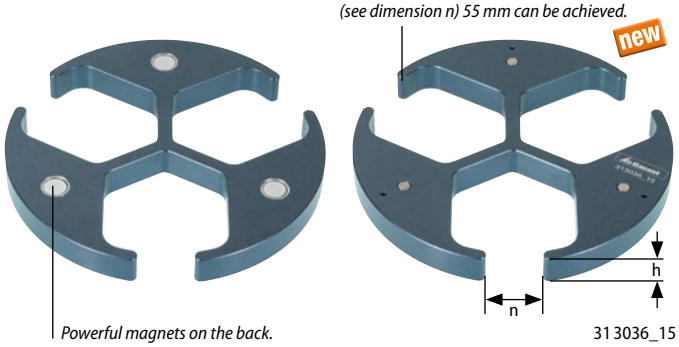
Garant Magnetic workpiece back-stop - for lathe chuck

Stop with 3 magnets at the rear. Steel blue anodised.

Suitable for: Three-jaw lathe chucks with jaw width up to 55 mm.

Application:
- For clamping short components.
- For component ∅ 15-150 mm.
- Flexible extension of the height by attaching the magnetic height elements No. 313037 5.

By milling off the ribs up to jaw width (see dimension n) 55 mm can be achieved.



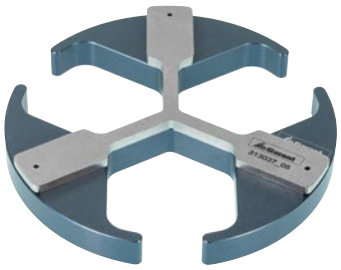
Powerful magnets on the back.

31 3036_15

Height h	mm	15
31W 31 3036	Workpiece back-stop, base module	XXX
n	mm	25
Material		Aluminium

Height element

- Centrifugal force protection (positive locking).
- Magnetic attraction by means of 3 magnets.



31 3037

Base module with height element.

Height h	mm	5
31W 31 3037	Height element, star support	XXX
Material		Steel

HOLEX Magnetic workpiece back-stop - for lathe chuck

Stop with 3 magnets at the rear. Red anodised.

Suitable for: Three-jaw lathe chucks with jaw width up to 55 mm.

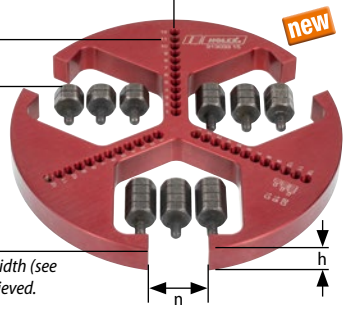
Application:
- For clamping short components.
- For component ∅ 15-150 mm.
- Flexible extension of the height by screwing in the height elements supplied.

Supplied with: 9-piece height support set No. 313034 9.
Contents: 3×10 mm, 3×15 mm and 3×20 mm.

M5 thread for positioning the height elements.

Numbered 1-12 as an aid to positioning.

9-piece height support set with M5 thread and height orientation notch.



By milling off the ribs up to jaw width (see dimensions n) 55 mm can be achieved.

31 3033

Height h	mm	15
31V 31 3033	Component backstop	XXX
n	mm	25
Material		Aluminium

Clamping devices: Lubricate at regular intervals

Why?

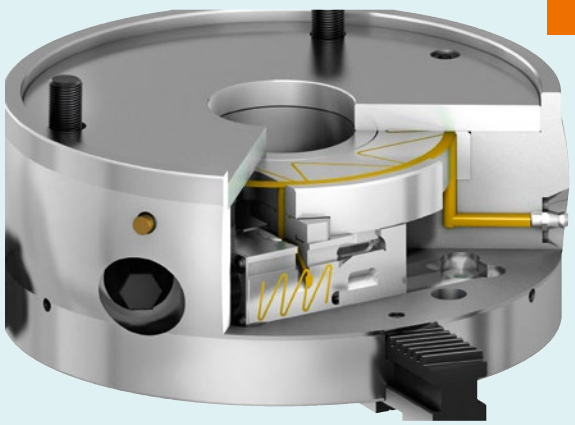
Regular lubrication maintains the clamping force and ensures reliable operation of the lathe chuck. Reduction in maintenance and repair costs.

Risks!

- Clamping force is up to 50% less when the chuck is dry.
- The workpiece may fly out whilst being machined.

What must be complied with?

- Maintenance and lubrication intervals specified by the chuck manufacturer (to DIN EN 1550) must be strictly complied with.
  This instruction can be found in the instruction manuals.
- Ensure equal distribution of the lubricant to avoid imbalances.



Central lubrication system of a ROTA S Plus 2.0

Manufacturers recommend:

Linomax:	Particularly suitable for manual chucks
Linomax 200:	Particularly suitable for heavy-duty chucks
F 80:	Suitable for manual chucks and heavy-duty chucks

Schunk Linomax 500 g cartridge *Röhm 500 g cartridge*

Chuck jaws finder – Powered by Schunk and the Hoffmann Group

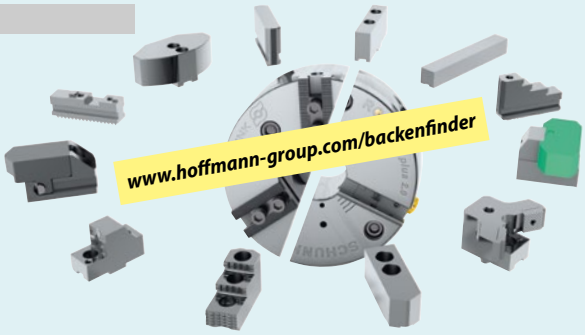
Easily find the right jaws.

SCHUNK offers the largest range of standard chuck jaws in the world.
With just 4 clicks here you can choose the right jaws from more than **1200 standard jaws**.

Large selection of jaws for geared scroll chucks, self-centring chucks or heavy-duty chucks from a wide range of manufacturers.

Chucks range

- Schunk
- Kitagawa
- Berg
- Forkard
- Howa
- Röhm
- Samchully
- SMW



Jaws ranges

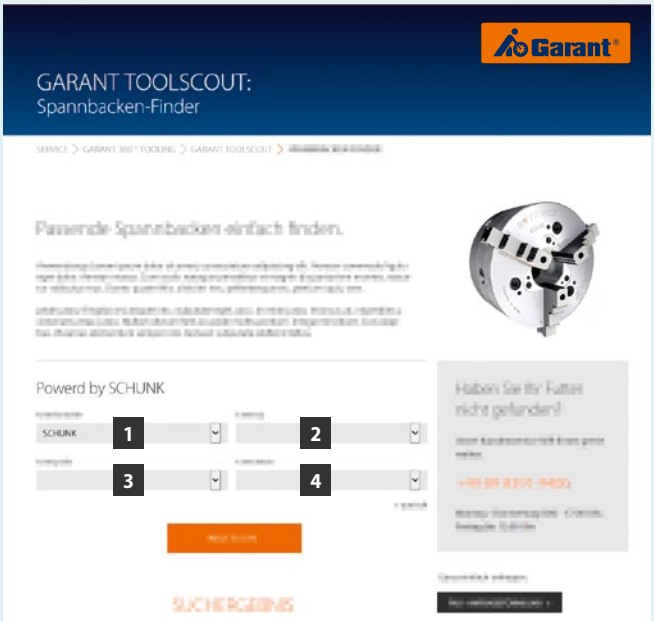
- Base jaws
- Top jaws
- Stepped jaws
- Lathe jaws
- Stepped jaws
- Reversible jaws
- Claw jaws
- Segment jaws
- and much more

Quickly and easily find the right jaws for your lathe chuck.
Just 4 steps take you to the right jaw, using our online Jaws Pilot.

www.hoffmann-group.com/backenfinder

Select

1. Chuck manufacturer
2. Chuck type
3. Chuck size
4. Chuck details



Chucks range

- Huge selection of standard clamping jaws for many manufacturers and chuck types.
- Quick and easy.
- No incorrect ordering.
- Mostly available ex stock.

Take advantage of the Hoffmann Group Jaws Pilot and send us a request for a quote without obligation.

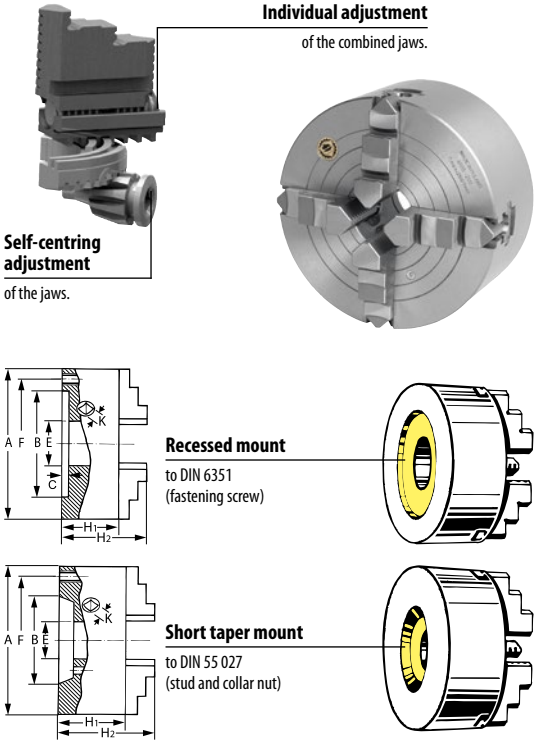
BISON Combination four-jaw lathe chucks – with individual and centric jaw adjustment

Standard: **DIN 6351** Wescott system.
Material: Cast iron
Application: Combined clamping option due to two different jaw adjustments:
a) Self-centring adjustment of the base jaws (geared scroll);
b) Individual adjustment of top jaws.
This allows irregularly shaped components to be clamped as if to a face plate. The gear scroll for jaw adjustment is **through-hardened,** the flanks of the scroll and of the bottom jaw teeth are **ground on both sides.**

31 5635 – **With recessed mount** DIN 6351 Form A. The chuck is mounted on a flange by screws inserted from the rear and the flange is then mounted on the lathe spindle. Flange blanks (see No. 317000) must first be adapted to the machine and then to the lathe chuck.

31 5645 – **Short taper series to DIN 55027** with studs and collar nuts for spindle noses to DIN 55027. (DIN 55027 and international standard ISO 702/III are identical to DIN 55022 (old standard)). The chuck is fitted to the spindle nose directly, without an intermediate adaptor.

Supplied with:
1 set = 4 hardened base jaws,
1 set = 4 hardened reversible jaws (internally and externally applicable)
1 chuck key,



Outer ∅ A / taper	36B 31 5635	36B 31 5645	Aperture E	Height without jaws H_1	Height with jaws H_2	Pitch circle diameter F	Number of studs	Size of studs	Centring ∅ B	Centring taper B	Centring depth C	Chuck key square K	Weight
	Combination four-jaw lathe chucks												
	recessed mount	Short taper mount											
mm	DIN 6351	DIN 55027	mm	mm	mm	mm			mm	mm	mm	mm	kg
125	XXX	–	38	75	95	108	–	–	95	–	4	9	6
160	XXX	–	42	84	116	140	–	–	125	–	4	11	11
200	XXX	–	55	96	127	176	–	–	160	–	5	11	19
200/5	–	(XXX)	55	112	143	104.8	4	M10	–	82.575	–	11	19
200/6	–	(XXX)	55	112	143	133.4	4	M10	–	106.39	–	11	19
250	XXX	–	76	102	135	224	–	–	200	–	6	14	31

SCHUNK Claw jaws for chucks / accessories

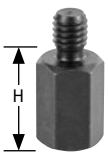
Hardened clamping jaws. For external clamping of blanks, with serrations 1.5×60°.

Note: Suitable for BISON – 2405K; Kitagawa B 200 / BA / HOB / NL / N / NA; Matsumoto H / HA / ZA.

31 3953

Type			1	2	3	4	5
33T 31 3953	Claw jaws set, 3 pieces, for chucks	∅ 200 mm	XXX	XXX	XXX	XXX	XXX
33T 31 3955		∅ 250 mm	XXX	XXX	XXX	XXX	XXX
Clamping range (31 3953)		mm	35 – 63	62 – 90	92 – 121	122 – 151	144 – 173
Clamping range (31 3955)		mm	43 – 81	84 – 123	128 – 167	173 – 212	202 – 260

Height H	mm	5	10	15	20	Thread M	Width across flats mm
33T 31 3981	Mounting bolt (piece)	XXX	XXX	XXX	XXX	M6	10



31 3981

HOLEX Length stop for lathes (hollow spindle stop)

Function: Twisting the clamping stud tightens the 4 integral jaws against the inner wall.
Application: Optimum aid for axial locking to any point on the hollow spindle.
Supplied with: Including special wrench for the clamping pin.

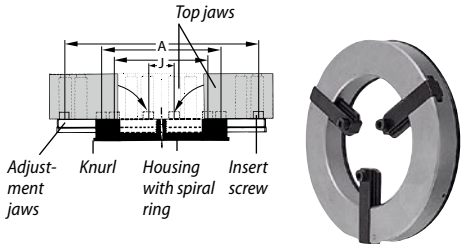
Note: Not suitable for automatic chucks with a clamping tube.

Type		1	2	3	4	5	6	7	8	9	10	11
32Z 31 3145	Length stop for lathe	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
for spindle ∅	mm	20 – 23	23 – 27	27 – 31	31 – 39	39 – 47	47 – 57	57 – 65	65 – 78	78 – 94	94 – 110	110 – 130
Length of clamping wrench	mm	600	600	600	600	600	750	750	750	750	750	750

Jaw cutting attachment – for three-jaw chucks

Within the body is a **drop-forged gear scroll**, which is rotated via a knurl ring on the periphery of the body. This gear scroll moves 3 **reversible** adjustment jaws steplessly inwards or outwards. For turning, the clamping screws of the adjustment jaws are positioned in the bore of the lathe chuck top jaws and the chuck is tightened. **During turning the chuck is in the same condition (preloaded) as for the subsequent workpiece machining.**

Application: For precision machining **internal and external diameters of soft top jaws** on lathe chucks. **Also suitable for external and internal re-grinding** of hardened top jaws to **correct radial runout.**



Outer / inner ∅		mm	153/110	176/110	215/135	244/162	290/208	342/260
38L 31 5900	Jaw cutting attachment		XXX	XXX	XXX	XXX	(XXX)	(XXX)
Insert area ∅ position J		mm	50 – 115	35 – 125	70 – 140	100 – 175	145 – 215	160 – 270
Insert area ∅ position A		mm	150 – 215	170 – 260	215 – 285	240 – 360	290 – 360	330 – 440
Weight		kg	1.5	3.5	5	6	7	8
suitable for chucks up to ∅		mm	250	200	250	250	315	400

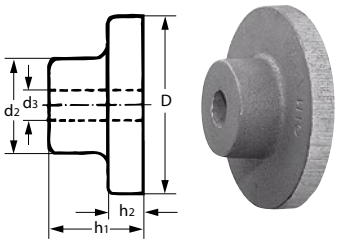
Flange blanks for lathe chucks with recessed mount

Cleanly cast, unmachined, shot blasted, large allowance.

Suitable for: **Three-jaw chucks No. 310100 / 0500,** four-jaw chucks **No. 312000 / 2500** and combi chucks **No. 315630.**

Material: Cast iron

Application: Attachment of **chucks with recessed mount to DIN 6350 to spindle noses DIN 800.** The adaptor plate blank must be machined and fitted to the machine and chuck.



External ∅ D		mm	92	120	135	170	210	260
33R 31 7000	Flange blank for geared scroll chuck		(XXX)	(XXX)	(XXX)	(XXX)	(XXX)	(XXX)
suitable for chuck ∅		mm	80	100	125	160	200	250
Collar ∅ d_2		mm	56	80	80	80	92	105
Bore ∅ d_3		mm	20	25	25	30	40	50
Height h_1		mm	47	58	58	58	66	92
Flange thickness h_2		mm	15	20	20	20	22	25

Short taper adapters

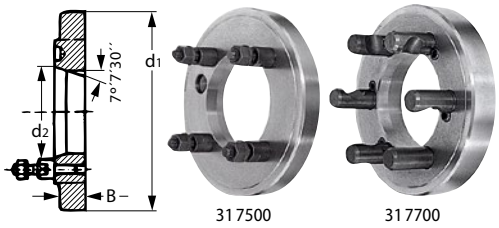
Finish machined on all sides.

Material: Special cast iron.

Application: **For retrofitting** to lathe chucks with recessed mount to DIN 6350 A. **Lathe chucks with incorporated short tapers are preferable due to shorter overhang.**

31 7500 – For spindle noses **DIN 55027** and ISO 702/III (equals the old standard **DIN 55022**) with studs and collar nuts.

31 7700 – For spindle noses **ASA B 5.9 version D 1** (Camlock) and **DIN 55029.**



31 7500 31 7700

∅ d_1 / taper		mm	160/5	200/5	200/6	250/6	250/8	315/6	315/8	400/11
33R 31 7500	Short taper chuck flange DIN 55027		XXX	(XXX)	XXX	XXX	XXX	(XXX)	(XXX)	XXX
33R 31 7700	Short taper chuck flange, ASA B5.9 D1, DIN 55029		(XXX)	(XXX)	(XXX)	(XXX)	(XXX)	(XXX)	(XXX)	–
Taper ∅ d_2		mm	82.575	82.575	106.39	106.39	139.735	106.39	139.735	196.885
Thickness B (31 7500)		mm	21	25	25	30	30	35	35	36
Thickness B (31 7700)		mm	28	33	33	38	38	38	38	–
Number of studs (31 7500)			4	4	4	4	4	4	4	6
Number of camlock bolts (31 7700)			6	6	6	6	6	6	6	–

Spare chuck key

31 7810 – **With spring-mounted sleeve** to prevent the key being inadvertently left in the chuck.

Application: For chucks No. 310100 – 312700.

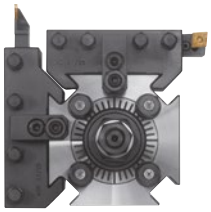
Note: For chuck size 74, see hexagon key No. 626000.

31 7800 31 7810

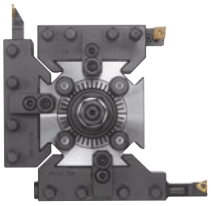
for chuck ∅		mm	80	100	125	160	200	250	315	350	400
33R 31 7800	Standard chuck key		XXX	XXX	XXX	XXX	XXX	XXX	XXX	(XXX)	(XXX)
33R 31 7810	Safety lathe chuck key **sprung, with ejector.**		–	(XXX)	XXX	XXX	XXX	XXX	XXX	(XXX)	(XXX)
Square		mm	6	8	9	10	11	12	14	14	17
also suitable for chuck ∅			–	–	140	–	–	–	–	–	–

Quick-change toolholders and clamping sleeves

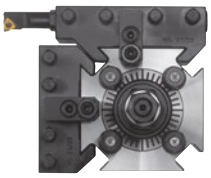
WD universal



WDR / WD combined



WDR external turning



WDL internal machining

Quick-change toolholders

Type		1/12	1/20	2/25	3/32	3/40	4/40	4/50
33P 31 6120	WD quick-change holder **Universal**	XXX	XXX	XXX	XXX	XXX	XXX	XXX
33P 31 6140	WDL quick-change holder **Internal grooving**	(XXX)	(XXX)	XXX	XXX	XXX	(XXX)	(XXX)
33P 31 6160	WDR quick-change holder **External grooving**	(XXX)	(XXX)	XXX	XXX	XXX	(XXX)	(XXX)
33P 31 6180	WDPL quick-change holder **for round lathe tools**	XXX	–	XXX	XXX	–	(XXX)	–

Type / Internal ∅ R	mm	1/30	2/40	3/40	3/50	4/60
33P 31 6200	WB quick-change holder **internal machining**	(XXX)	XXX	XXX	XXX	(XXX)
33P 31 6220	WBW quick-change holder **individual machining**	(XXX)	XXX	(XXX)	(XXX)	(XXX)

31 6120 WD

31 6140 WDL

31 6160 WDR

31 6180 WDPL

31 6200 WB

31 6220 WBW

Clamping sleeves

Application: For use with quick-change toolholder WB.
For holding tools with **MT shank.**

Type		2/3	2/4	3/3	3/4	4/4	4/5
33P 31 6240	Clamping sleeve **For MT shank**	XXX	XXX	XXX	XXX	(XXX)	(XXX)
suitable for 316200		2/40; 3/40	2/40; 3/40	3/50	3/50	4/60	4/60
L	mm	112	135	112	135	138	138
∅	mm	40	40	50	50	60	60

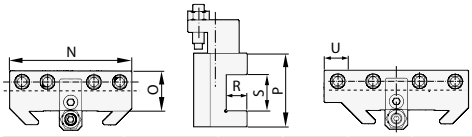
31 6240

Application: For holding tools with **plain shank.**

Note: **Please specify required clamping ∅ with order.**

Type / Clamping ∅	mm	1/..	2/..	3/..	4/..
33E 31 6260	Clamping sleeve **for plain shank**	(XXX)	(XXX)	(XXX)	(XXX)
specify required clamping ∅	mm	8; 10; 12; 15; 16; 20; 25	10; 12; 15; 16; 20; 25; 32	20; 25; 32; 40	25; 32; 40; 50
suitable for 316200		1/30	2/40; 3/40	3/50	4/60
L	mm	50	78	88	88
∅	mm	30	40	50	60
Collar thickness	mm	4			

31 6260



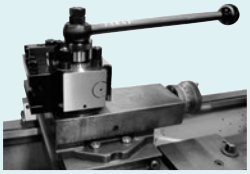
Type	Size	N	O	P	R	S	U	kg
WD	1/12	84	24	47	14	22	–	0.7
WDL/WDR	1/12	100	24	47	14	22	16	0.8
WD	1/20	84	33	52	20	22	–	0.8
WDL/WDR	1/20	100	33	52	20	22	16	0.9
WDPL	1/12	100	28	47	16	22	16	0.9
WB/WBW	1/30	84	39	47	∅ 30	–	–	0.8
WD	2/25	110	36	66	19	33	–	1.9
WDL/WDR	2/25	130	36	66	19	33	20	2.1
WDPL	2/25	130	51	62	31	33	20	2.3
WB/WBW	2/40	110	51	63	∅ 40	–	–	1.8

Type	Size	N	O	P	R	S	U	kg
WD	3/32	140	44	76	25	33	–	3.0
WDL/WDR	3/32	165	44	76	25	33	25	3.4
WDPL	3/32	165	53	66	∅ 31	33	25	3.6
WD	3/40	140	44	76	25	43	–	3.1
WDL/WDR	3/40	165	44	76	25	43	–	3.4
WB/WBW	3/40	140	53	76	∅ 40	–	–	2.7
WB/WBW	3/50	140	60	76	∅ 50	–	–	3.5
WD	4/40	160	53	96	30	44	–	5.0
WDL/WDR	4/40	190	53	96	30	44	30	5.8
WDPL	4/40	190	63	96	40	52	30	6.5
WD	4/50	160	63	96	40	54	–	5.5
WDL/WDR	4/50	190	63	96	40	54	30	6.0
WB/WBW	4/60	160	77	94	∅ 60	–	–	6.0

4-way turrets (RD) available on request

PSC on request.

Assembly service on bracket or top support available for sizes RD1 – RD5.



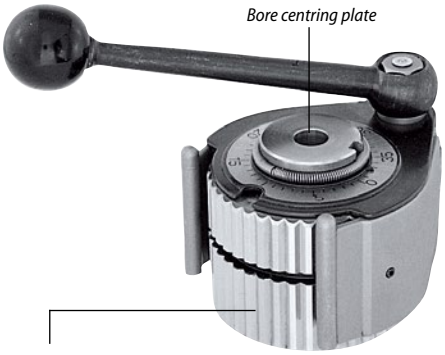
AXA Quick-change lathe tool post and toolholders

Quick-change lathe tool post with eccentric clamping

Application: Place the lathe tool post with its surface-ground face on to the cross slide in a horizontal position and clamp it. To do this, the bore of the centring plate must have been turned beforehand. Alignment is performed with the boring bar and boring bar holder clamped in position, aligned at right angles to the face plate. Then adjust the pointer to the zero mark of the cover disc and tighten the T-bolt securely. For precision lathe work or heavy roughing cuts, it is advisable to secure the post with two dowel pins. The holes are pre-drilled.

Supplied with: 1 eccentric lever for No. 318000, 1 tool post key for No. 318100 / 8200.

Note: Toolholder head and bracket type E available on request.
Version and further applications can be found in the table on page 844.



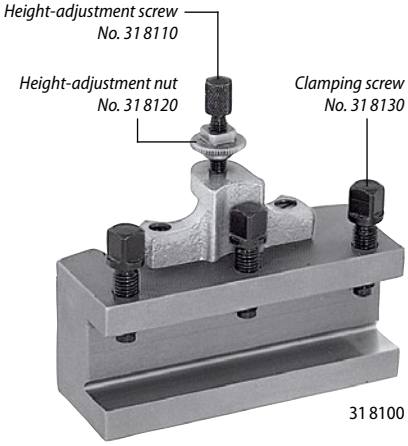
31 8000

Type		AA	A	B	C
36A 31 8000	Quick-change lathe tool post	XXX	XXX	XXX	XXX
maximum drive power of lathe	kW	1.104	1.472	5.888	11.04
maximum cross slide width SB	mm	80	100	150	180
maximum turning tool height h	mm	12	20	32	45
Bore ∅ of the head	mm	13	20	32	40
Bore ∅ of the centering plate	mm	10	10	16	16
Width	mm	70	100	150	200
Height	mm	37	54	75	105
maximum reach A	mm	30	48	71	100

Quick-change turning toolholder

With flat tool base. Equipped with locking height adjustment screw and 3 tool clamping screws.

Note: When ordering spare parts No. 318110 – 318130 please specify their number and the size of the quick-change turning toolholder.



31 8100

Type		AA12/50	A16/75	A16/90	A20/75	A20/90	B25/120	B25/140
36A 31 8100	Quick-change turning toolholder	XXX	XXX	XXX	XXX	XXX	XXX	XXX
suitable for 318000		AA	A	A	A	A	B	B
Height of the toolholder	mm	12	16	16	20	20	25	25
Length	mm	50	75	90	75	90	120	140
Thickness of tool support W	mm	6	8.75	8.75	10	10	12	12

Type		B32/120	B32/140	C32/150	C32/170	C40/150	C40/170
36A 31 8100	Quick-change turning toolholder	XXX	XXX	XXX	XXX	XXX	XXX
suitable for 318000		B	B	C	C	C	C
Height of the toolholder	mm	32	32	32	32	40	40
Length	mm	120	140	150	170	150	170
Thickness of tool support W	mm	14	14	17	17	17	18

Quick-change boring bar holder with prism

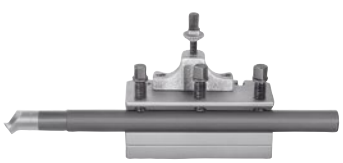
Application: For holding boring bars and other tools with a cylindrical shank. Equipped with locking height adjustment screw and 3 tool clamping screws.

31 8200

Type		AA	A	B	C40	C50
36A 31 8200	Quick-change boring bar holder	XXX	XXX	XXX	XXX	XXX
suitable for 318000		AA	A	B	C	C
for boring bar ∅	mm	12	20	30	40	50
Length	mm	50	85	130	160	160

Vee block base

Application: For boring bar holder No. 318200 size B. For holding small boring bars and boring heads.



31 8210

36A 31 8210	Vee block base	XXX
suitable for 318200		B
Length	mm	130

Quick-change toolholder with plain bore

Equipped with locking height adjustment screw and 2 clamping screws.

Application: For mounting Morse taper sleeves No. 318400 and for direct mounting of large boring bars No. 318500.

31 8300

Type		A	B	C40	C50
36A 31 8300	Quick-change toolholder with plain bore	XXX	XXX	XXX	XXX
suitable for 318000		A	B	C	C
Bore ∅	mm	30	40	40	50
Length	mm	80	120	160	160

Morse taper sleeves

Morse taper sleeve with release screw for quick-change toolholder No. 318300. The sleeve is cylindrical on the outside.

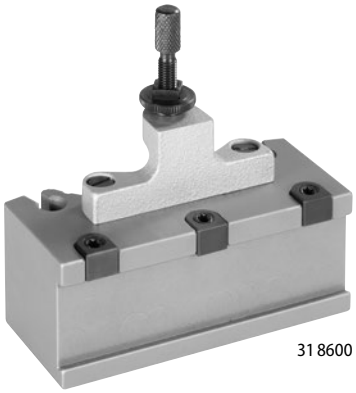
Application: For tools with Morse taper shank (e.g. drills, countersinks, reamers etc.).

31 8400

Type		A1	A2	B3	B4	C3	C4
36A 31 8400	MT sleeve for quick-change toolholder	(XXX)	XXX	XXX	XXX	XXX	XXX
suitable for 318300		A	A	B; C40	B; C40	C	C
External ∅	mm	30	30	40	40	50	50

Quick-change parting-off toolholder

Rigid toolholder for parting-off tools.
The parting-off tool projection is especially short and non-vibrating, and the side of the tool is flush with the toolholder.



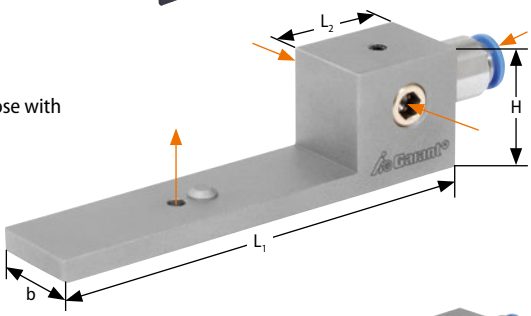
31 8600

Type		A	B
36A 31 8600	Quick-change parting-off toolholder without tool	XXX	XXX
suitable for 318000		A	B
suitable for blade height	mm	26	32

Garant eco retrofit kit for square screw-on toolholder

- For coolant transfer to eco-system screw-on toolholders and grooving toolholders.
- **Suitable for AXA quick-change toolholders No. 318100 and PARAT quick-change toolholders No. 316120 – 316160.**
- The coolant feed is performed via a hose coupling from the left, right or rear.

Supplied with: Includes a screw plug and quick-change coupling (G 1/8 inch) for connection of a hose with external ∅ 6 mm. Coupling length 17.4 mm.



Shank width b	31V 31 7900 eco retrofit kit	for shank height H_1	Overall length L_1	Length L_2	Overall height H
mm		mm	mm	mm	mm
16	XXX	16	79	25	20
20	XXX	20	94	25	25
25	XXX	25	109	25	32

AXA Spare parts for quick-change lathe toolholders

suitable for toolholder		A	B	C
36A 31 8110	Height adjustment screw	XXX	XXX	XXX
Thread ∅		M5	M 7	M 9
Length	mm	35	56	65

31 8110

suitable for toolholder		A	B	C
36A 31 8120	Height adjustment nut	XXX	XXX	XXX
Thread ∅		M5	M7	M9
Square	mm	8	10	14

31 8120

suitable for toolholder		A	B	C
36A 31 8130	Clamping screw	XXX	XXX	XXX
Thread ∅		M7	M11	M14×1.5
Length	mm	21	27	38
Square	mm	8	10	14

31 8130

suitable for toolholder		A	B	C
36A 31 8140	Height adjuster complete	XXX	XXX	XXX
Length	mm	50	72	94
Height	mm	20	30	50

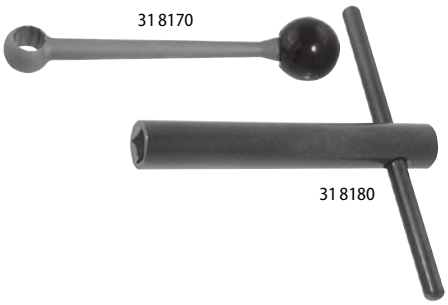
31 8140

suitable for toolholder head		A	B	C
36A 31 8150	Clamping arm complete	XXX	XXX	(XXX)
Clamping ∅	mm	60	90	120

31 8150

Eccentric bolt with grease nipple

suitable for toolholder		A	B/C
36A 31 8170	Clamping lever	XXX	XXX
bi-hex	mm	12	17
Length	mm	150	190



31 8170

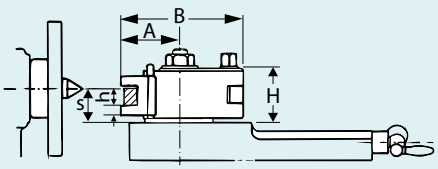
31 8180

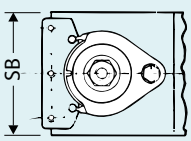
suitable for toolholder		A	B	C
36A 31 8180	Square toolpost key	XXX	XXX	XXX
∅	mm	13	18	25
square	mm	8	10	14
suitable for clamping screws			318130	

Quick-change lathe toolholders

Size determination for tool post No. 31 8000 and turning toolholder No. 318100.

1. Cross slide width SB.
   The length L of the turning toolholder No. 31 8100 should be about equal to the cross slide width SB.
2. Minimum cutting edge height S
   when using turning tool height h.





Tool height h	Turning toolholder size											
	AA	A		B		C		D				
	12	16	20	25	32	32	40	1/40	1/50	1/63	2/50	2/63
mm	Necessary minimum cutting edge height S (mm)											
6	12											
8	14											
10	16	19										
12		21										
16		25	25	28.5								
20			29	32.5	34							
25				37.5	39	40.5						
32					46	47.5	47.5	52			52	
40							55.5	60	60		60	65
50									70	70	70	75
63										83		88

Example for size determination:

Existing: Cross slide width "SB" = 145 mm
height of cutting edge "S" = 33 mm

Required:
1. Turning toolholder No. 31 8100 size B25/140
   140 – for cross slide width SB 145
   B25 – for cutting edge height 33
   (maximum turning tool height h = 20 mm).
2. Tool post No. 31 8000 size B.

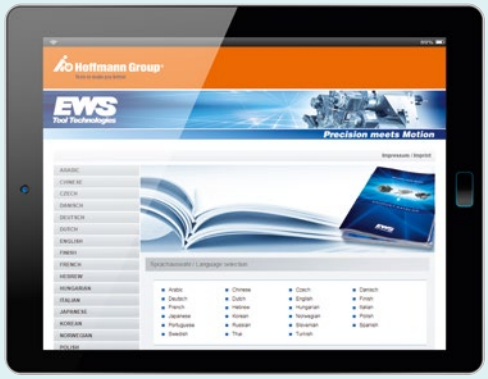
Online catalogue: www.hoffmann.ews-tools.com

A strong alliance –
partnership with the

Hoffmann Group

Precision tool arbours
for lathes / milling machines

Test the Hoffmann Group EWS online catalogue – find the right VDI tool quickly and easily!
Simply go to **www.hoffmann.ews-tools.com** enter your **customer number** and **German post code** or country code
Select your contact person.



Make your selection of EWS tools by "machine model" or item number.

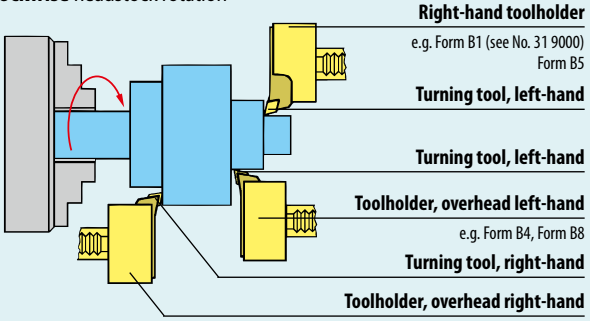
Exact technical specifications, some rotating 3D models and ***CAD data downloads*** *will assist you in making the correct tool selection.*

Add your selection to your shopping basket and send off your enquiry – **done:**
Within a short time you will receive a binding quotation from the Hoffmann Group.
Use the direct link – simple, quick, and secure: www.hoffmann.ews-tools.com

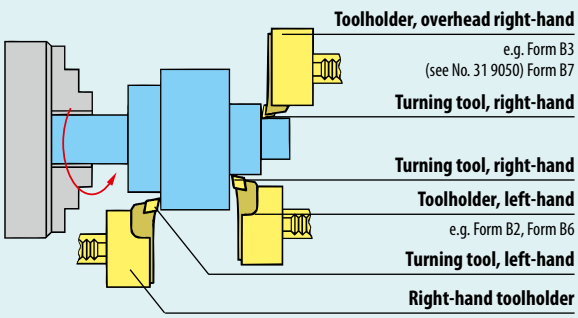
Information on the operation of VDI arbors to DIN 69880, Part 1

Application of radial toolholders

for **anti-clockwise** headstock rotation

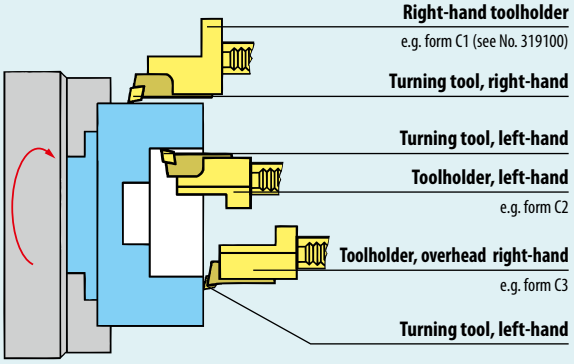


for **clockwise** headstock rotation

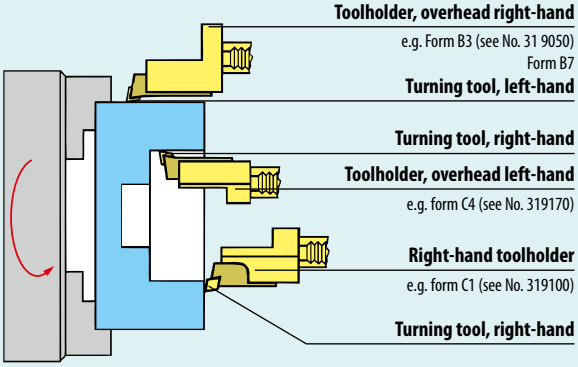


Application of axial toolholders

for **anti-clockwise** headstock rotation



for **clockwise** headstock rotation



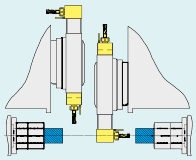
EWS Use of tools on radial, BMT, and disc turrets

Driven tools for disc turrets and radial turrets

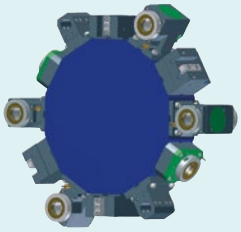
Optimise your machining processes.

The use of EWS precision tools makes your production process more efficient due to:

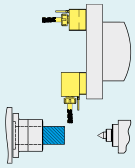
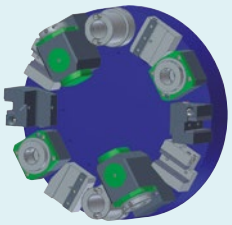
- More flexible use of your machine.
- Complete machining of complex workpieces.
- Rationalisation of former operations.



VDI radial turret



BMT radial turret

VDI disc turret

Turret interface

DIN 5480

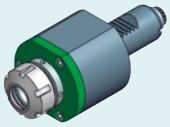
DIN 5482

DIN 1809

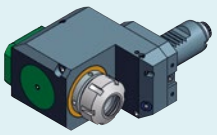
DIN TOEM

Okuma LB

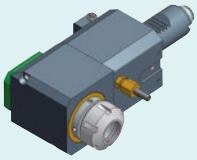
Tool overview for radial turrets



Axial drilling and milling head



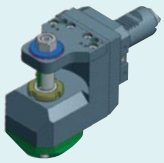
Radial drilling and milling head recessed



Radial drilling and milling head

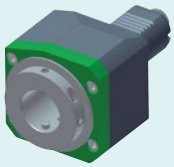
Radial drilling and milling head double-sided

Pivot head ± 90°

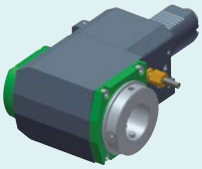


Disc milling head

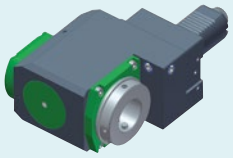
EWS VARIA quick-change system



Axial drilling and milling head VARIA

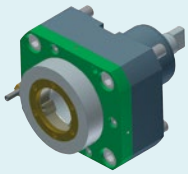


Radial drilling and milling head VARIA

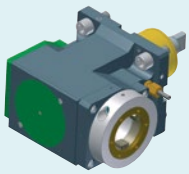


Radial drilling and milling head VARIA, recessed

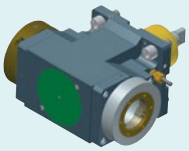
Driven tools VARIA – BMT



Axial drilling and milling head VARIA



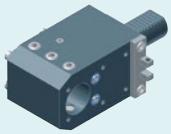
Radial drilling and milling head VARIA



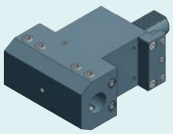
Radial drilling and milling head, double-sided VARIA

Overview tool range – Stationary tools for radial turrets

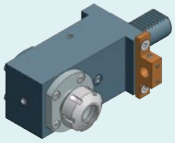
(VDI arbor: DIN 69880)



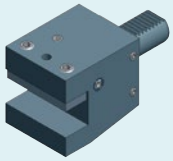
Fixed boring bar holder



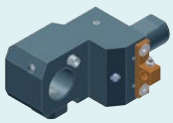
Boring bar holder, double face, fixed



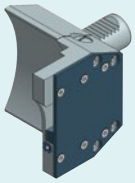
ER collet chuck



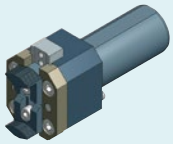
Square transverse toolholder



Offset toolholder VDI / VDI

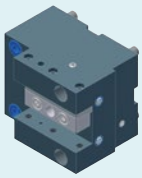


Parting-off toolholder



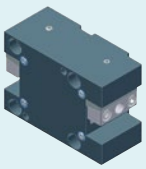
Bar holder

BMT stationary tools

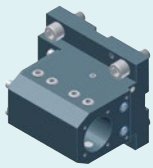


Square Transverse toolholder

Square Longitudinal toolholder



Multiple toolholders



Boring bar holder

All tools available alternatively with for instance ER collets, Weldon, face mill adaptors, VARIA or VARIA VX with internal cooling (IC) or external cooling (EC) and step-up or step-down gearing.

Overview of the tool range – disc turrets / radial turrets

B = Square transverse toolholders

GARANT **eco B1,**
right-hand, short (No. 319001)

GARANT **eco B2,**
left-hand, short (No. 319011)

GARANT **eco B3,**
overhead right-hand, short (No. 319051)

GARANT **eco B4,**
overhead left-hand, short (No. 319061)

HOLEX **B1,**
right-hand, short (No. 319000)

HOLEX **B2,**
left-hand, short (No. 319010)

HOLEX **B3,**
overhead right-hand, short (No. 319050)

HOLEX **B4,**
overhead left-hand, short (No. 319060)

HOLEX **B5,**
right-hand, long (No. 319070)

HOLEX **B6,**
left-hand, long (No. 319080)

GARANT **B7,**
overhead right-hand, long (No. 319091)

GARANT **B8,**
overhead left-hand, long (No. 319093)

C = Square longitudinal toolholders

GARANT **eco C1,**
right-hand (No. 319101)

GARANT **eco C2,**
left-hand (No. 319111)

GARANT **eco C3,**
overhead right-hand (No. 319161)

GARANT **eco C4,**
overhead left-hand (No. 319171)

HOLEX **C1,**
right-hand (No. 319100)

HOLEX **C2,**
left-hand (No. 319110)

HOLEX **C3,**
overhead right-hand (No. 319160)

HOLEX **C4,**
overhead left-hand (No. 319170)

E = Toolholders with plain shank

HOLEX **E1,**
indexable drill holder
(No. 31 9200)

HOLEX **E2,**
Boring bar holder
(No. 31 9350)

GARANT **E2,**
Boring bar holder, slit
(No. 31 9276)

HOLEX **E3,**
Collet chuck holder OZ
(No. 31 9500 / 9550)

HOLEX **E4,**
Collet chuck holder ER
(No. 31 9600 / 9650 / 9700)

D = Multiple toolholders

HOLEX **D1,**
Multiple toolholder
(No. 31 9185)

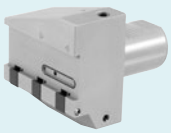
HOLEX **D2,**
Multiple toolholder, overhead
(No. 31 9190)

GARANT **drill chuck,**
(No. 31 9715 / 9725_1-16)

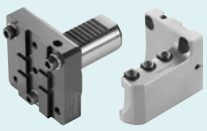
Z2,
Blanking plug (No. 31 9770)

GARANT **eco,**
Double toolholder (No. 31 9191)

Parting-off toolholders, bar holders, blanks



GARANT **eco,**
Parting-off toolholder (No. 319133)



Base toolholder (No. 31 9135) and parting-off toolholder (No. 31 9140)

Bar holder

A1,
Square blank

A2,
Cylindrical blank

VDI toolholders

Form B1, B2, B3, B4, B5, B6, B7 and B8

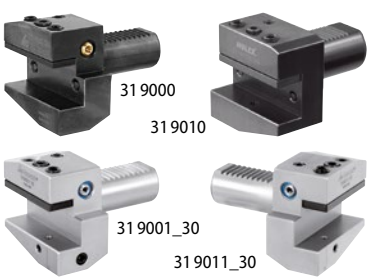
- Case-hardened HRC 58 ±2.
- All functional faces ground.
- With ball type coolant nozzles.

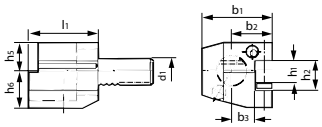
Standard: **ISO 10889 / DIN 69880 / VDI 3425,** sheet 2.

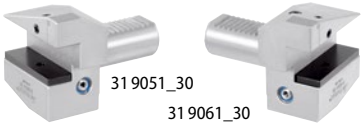
Application: Mainly for external machining.

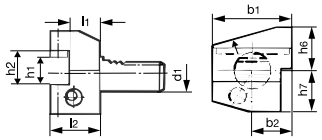
Size 20-40: With screw-in coolant nozzle up to 80 bar

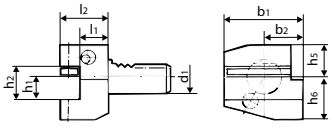
Shank ∅ d_1			mm	16	20	25	30	40	50
32V	31 9000	HOLEX	Toolholder, form B1 **radial right-hand, short**		XXX	XXX	–	XXX	XXX	XXX
31V	31 9001	Garant	eco-toolholder, form B1 **radial right-hand, short**		–	XXX	XXX	XXX	XXX	XXX
32V	31 9010	HOLEX	Toolholder form B2 **radial left-hand, short**		XXX	XXX	–	XXX	XXX	XXX
31V	31 9011	Garant	eco-toolholder form B2 **radial left-hand, short**		–	XXX	XXX	XXX	XXX	XXX
32V	31 9050	HOLEX	Toolholder form B3 **radial right-hand, short**		XXX	XXX	–	XXX	XXX	XXX
31V	31 9051	Garant	eco-toolholder form B3 **radial right-hand, short**		–	XXX	XXX	XXX	XXX	XXX
32V	31 9060	HOLEX	Toolholder form B4 **radial left-hand, short**		XXX	XXX	–	XXX	XXX	XXX
31V	31 9061	Garant	eco-toolholder form B4 **radial left-hand, short**		–	XXX	XXX	XXX	XXX	XXX
32V	31 9070	HOLEX	Toolholder form B5 **radial right-hand, long**		–	–	–	XXX	XXX	–
31V	31 9071	Garant	eco-toolholder form B5 **radial right-hand, long**		–	–	–	XXX	XXX	–
32V	31 9080	HOLEX	Toolholder form B6 **radial left-hand, long**		–	–	–	XXX	XXX	–
31V	31 9081		eco-toolholder form B6 **radial left-hand, long**		–	–	–	XXX	XXX	–
new 31V	31 9091	Garant	eco-toolholder, form B7 **radial right-hand, long**		–	–	–	XXX	XXX	–
new 31V	31 9093		eco-toolholder, form B8 **radial left-hand, long**		–	–	–	XXX	XXX	–
h_1 (31 9000, 31 9010, 31 9050, 31 9060, 31 9070, 31 9071, 31 9080, 31 9081, 31 9091, 31 9093)			mm		12	16	–	20	25	32
h_1 (31 9001, 31 9011, 31 9051, 31 9061)			mm		–	16	16	20	25	25
h_2 (31 9000, 31 9010, 31 9050, 31 9060, 31 9070, 31 9071, 31 9080, 31 9081, 31 9091, 31 9093)			mm		17	22	–	29	34	41
h_2 (31 9001, 31 9011, 31 9051, 31 9061)			mm		–	22	22	29	34	34
b_1 (31 9000, 31 9001, 31 9010, 31 9011, 31 9050, 31 9051, 31 9060, 31 9061)			mm		42	55	55	70	85	100
b_1 (31 9070, 31 9071, 31 9080, 31 9081, 31 9091, 31 9093)			mm		–	–	–	100	118	–
b_2 (31 9000, 31 9001, 31 9010, 31 9011, 31 9050, 31 9051, 31 9060, 31 9061)			mm		25	30	30	35	42.5	50
b_2 (31 9070, 31 9071, 31 9080, 31 9081, 31 9091, 31 9093)			mm		–	–	–	65	75.5	–
h_5			mm		20	30	30	38	48	35
h_6 (31 9000, 31 9001, 31 9010, 31 9011, 31 9050, 31 9051, 31 9060, 31 9061, 31 9091, 31 9093)			mm		22	25	25	35	42.5	60
h_6 (31 9070, 31 9071, 31 9080, 31 9081)			mm		–	–	–	28	32.5	–
l_1			mm		13	16	16	22	22	30
l_2			mm		24	30	30	40	44	55
Colour code for VDI shanks										











Form C1, C2, C3, and C4

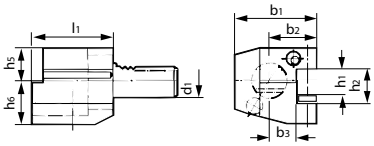
- Case-hardened HRC 58 ±2.
- All functional faces ground.
- With ball type coolant nozzles.

Standard: **ISO 10889 / DIN 69880 / VDI 3425,** sheet 2.

Application: For plane cutting in.

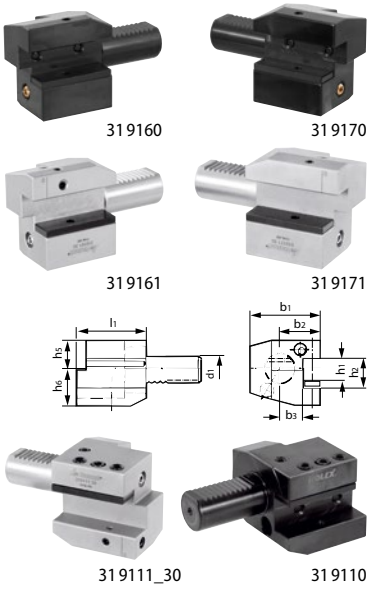
Size 20-40: With screw-in coolant nozzle up to 80 bar

Shank ∅ d_1			mm	16	20	25	30	40	50
32V	31 9100	HOLEX	Toolholder form C1 **axial, right hand**		XXX	XXX	–	XXX	XXX	XXX
31V	31 9101	Garant	eco-toolholder form C1 **axial, right hand**		–	XXX	XXX	XXX	XXX	XXX
h_1 (31 9100)			mm		12	16	–	20	25	32
h_1 (31 9101)			mm		–	16	16	20	25	25
h_2 (31 9100)			mm		17	22	–	29	34	41
h_2 (31 9101)			mm		–	22	22	29	34	34
b_1			mm		43	52	58	70	85	100
b_2			mm		24	27	33	35	42.5	50
b_3			mm		13	13	19	17	20.5	26
h_5			mm		20	25	25	28	32.5	50
h_6			mm		22	30	30	38	48	60
l_1			mm		44	55	55	70	85	100
Colour code for VDI shanks										



Colour code: VDI 16 VDI 20 VDI 25 VDI 30 VDI 40 VDI 50

Shank ∅ d_1			mm	16	20	25	30	40	50
32V 31 9110	HOLEX	Toolholder form C2 **axial, left-hand**		XXX	XXX	–	XXX	XXX	XXX
31V 31 9111	Garant	eco-toolholder form C2 **axial, left-hand**		–	XXX	XXX	XXX	XXX	XXX
32V 31 9160	HOLEX	Toolholder form C3 **axial, right hand**		XXX	XXX	–	XXX	XXX	XXX
31V 31 9161	Garant	eco-toolholder form C3 **axial, right hand**		–	XXX	XXX	XXX	XXX	XXX
32V 31 9170	HOLEX	Toolholder form C4 **axial, left-hand**		XXX	XXX	–	XXX	XXX	XXX
31V 31 9171	Garant	eco-toolholder form C4 **axial, left-hand**		–	XXX	XXX	XXX	XXX	XXX
h_1 (31 9110, 31 9160, 31 9170)			mm	12	16	–	20	25	32
h_1 (31 9111, 31 9161, 31 9171)			mm	–	16	16	20	25	25
h_2 (31 9110, 31 9160, 31 9170)			mm	17	22	–	29	34	41
h_2 (31 9111, 31 9161, 31 9171)			mm	–	22	22	29	34	34
b_1			mm	43	52	58	70	85	100
b_2			mm	24	27	33	35	42.5	50
b_3 (31 9110, 31 9111, 31 9160, 31 9161, 31 9171)			mm	13	13	19	17	20.5	26
b_3 (31 9170)			mm	13	13	–	23	25.5	30
h_5			mm	20	25	25	28	32.5	50
h_6			mm	22	30	30	38	48	60
l_1			mm	44	55	55	70	85	100
Colour code for VDI shanks									



Double-sided axial toolholder

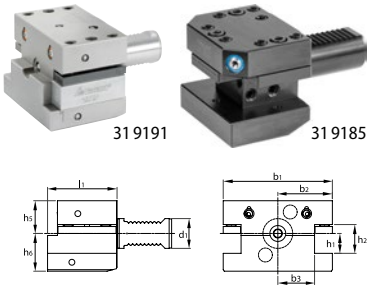
- Case-hardened HRC 58 ±2.
- All functional faces ground.
- With ball type coolant nozzles.

Standard: **DIN ISO 10889 / DIN 69880 / VDI 4325,** sheet 2.

Application:

31 9191 – Double serrations allow normal use or overhead use.

Shank ∅ d_1			mm	25	30	40	50
32V 31 9185	HOLEX	VDI multiple toolholder		–	XXX	XXX	(XXX)
32V 31 9190	HOLEX	VDI multiple toolholder, overhead		–	XXX	XXX	(XXX)
31V 31 9191	Garant	eco VDI double-sided axial toolholder		XXX	XXX	XXX	–
h_1			mm	16	20	25	32
h_2			mm	22	29	34	41
b_1 (31 9185, 31 9190)			mm	–	76	90	105
b_1 (31 9191)			mm	66	110	130	–
b_2 (31 9185, 31 9190)			mm	–	35	42.5	50
b_2 (31 9191)			mm	33	55	65	–
b_3 (31 9185, 31 9190)			mm	–	17	20.5	25.5
b_3 (31 9191)			mm	19	37	43	–
h_5 (31 9185, 31 9190)			mm	–	28	32.5	35
h_5 (31 9191)			mm	25	33	43.5	–
h_6			mm	46	38	48	60
l_1 (31 9185, 31 9190)			mm	–	60	72	85
l_1 (31 9191)			mm	70	70	85	–
Colour code for VDI shanks							

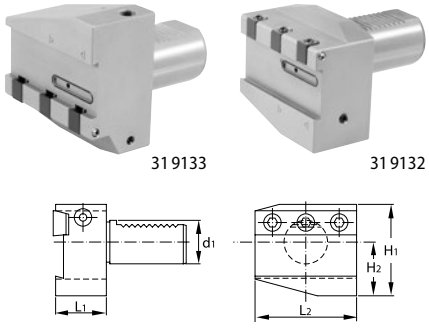


Parting-off toolholder

- With special adjustable ball type coolant nozzle for optimum cooling of the cutting edge, irrespective of the groove depth.
- This reduces the temperature both at the main cutting edge and the auxiliary cutting edge, and permits a **significant increase in cutting speed.**
- Rigid toolholder for parting-off tools.
- Blade clamped using clamping plate.

Application: Allows parting-off tools of different makes to be used.

Note: Screw plug for ball spray nozzle included. If conventional grooving tools are used, the lateral coolant transfer is blocked by the grooving tool. Suitable stepless adjustable clamps No. 279841 2 and suitable screws No. 279815 14. See spare parts list.



Shank ∅ d_1			mm	16	20	25	30	40	50
31V 31 9132	Garant	eco parting-off toolholder with ICS		XXX	XXX	XXX	XXX	XXX	XXX
31V 31 9133	Garant	eco parting-off toolholder overhead with ICS		(XXX)	XXX	XXX	XXX	XXX	XXX
suitable for blade height			mm	19	26	26	32	32	32
L_1			mm	29	36	36	47	54	62
L_2			mm	42	55	60	70	85	100
H_1			mm	42	47	47	57.4	73	75.5
H_2			mm	20	29	29	37	47	47
Colour code for VDI shanks									

Advantages with GARANT eco:

Flat helical swarf for outstanding chip evacuation, instead of long and tangled coiled swarf

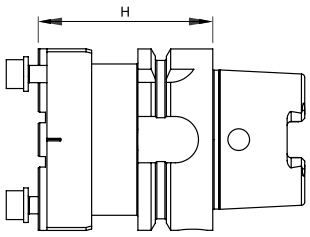
Hardly any trace of wear after the test run.

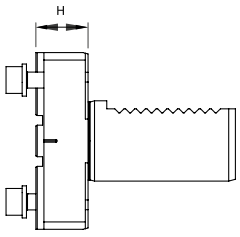
Surface roughness measurement shows smooth surfaces.

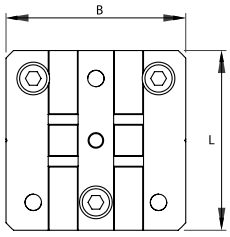
Colour code: VDI 16 VDI 20 VDI 25 VDI 30 VDI 40 VDI 50

eco adjustable base toolholders / parting-off toolholders

Advantage: Precisely adjustable tip height, permitting ideal machining results with consistent tool life.
Turret misalignments can be compensated.







		VDI25	VDI30	VDI40	VDI50	HSK-T63	PSC50	PSC63
31V 31 9135	Modular toolholder	XXX	XXX	XXX	XXX	XXX	XXX	XXX
L	mm	61.2	66	85	100	63	63	63
B	mm	60	66	85	90	63	63	63
H	mm	15.5	16.5	16.5	25	57.5	36	38
suitable for parting-off blade holder		Type 1	Type 1	Type 2	Type 2	Type 1	Type 1	Type 1

eco parting-off toolholders

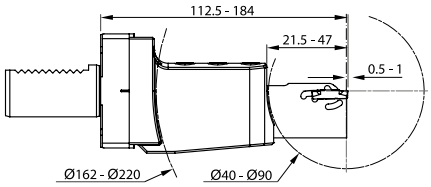
Slim design in 4 versions. Can be mounted turned through 180° for normal and overhead use. Optimum tool combination for grooving and parting-off operations between or close to headstock or tailstock, with minimum tool overhang.

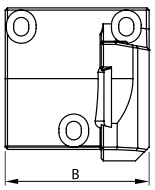
Application: For use on radial turrets and in milling spindles on milling-turning centres.
31 9145 – For use of eco grooving tools No. 273874– 273875.
31 9140/9141 – For use of eco grooving tools No. 273864– 273866.

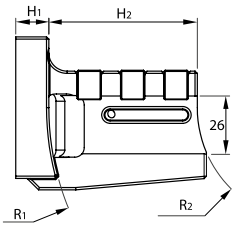
Note: Lateral coolant feed for eco grooving tools.
Versions RR and LR for using the grooving tool 273864. Versions RL and LL for grooving tool 273865. Versions RR and LL for grooving tool 273866.
Suitable stepless adjustable clamps No. 279841 2 and suitable screws No. 279815 14.
See spare parts list.

31 9140_RL

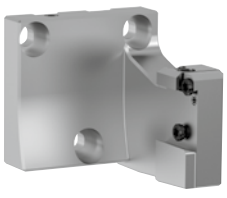
31 9140_RR







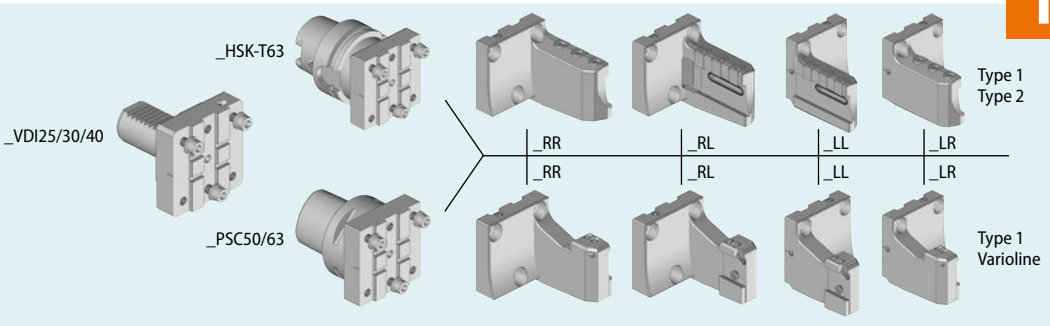
Version		RR	RL	LL	LR
31V 31 9140	eco parting-off toolholder **Type 1**	XXX	XXX	XXX	XXX
31V 31 9141	eco parting-off toolholder **Type 2**	XXX	XXX	XXX	XXX
31V 31 9145	eco parting-off toolholder **Varioline type 1**	XXX	XXX	XXX	XXX
B (31 9140)	mm	67			
B (31 9141)	mm	83			
B (31 9145)	mm	65			
H_1	mm	14.5			
H_2 (31 9140, 31 9141)	mm	65			
H_2 (31 9145)	mm	61			
R_1 (31 9140, 31 9141)	mm	117			
R_1 (31 9145)	mm	95			
R_2 (31 9140, 31 9141)	mm	50			


31 9145_RL

31 9145_RR

The new eco parting-off family

- Flexible
- Variable
- Versatile



EWS VDI parting-off toolholder

For use on DMG Gildemeister CTX CNC lathes with radial turrets.

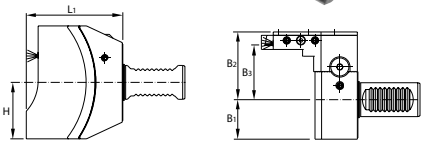
- With double serrations on the VDI shank for left-handed and right-handed use.
- With ball spray nozzle for optimum cooling of the cutting edge.
- Clamping the grooving tool by means of a clamping strip.
- Height adjustment range ±1 mm.

Suitable for: DMG Gildemeister CTX.

Application: Allows parting-off tools of different makes to be used.

Note: Sizes 30-UEK and 40-UEK as overhead versions.

31 9148_30



Shank ∅ d_1		mm	30	30-UEK	40	40-UEK
31V	31 9148	VDI parting-off toolholder 26	XXX	XXX	XXX	XXX
31V	31 9149	VDI parting-off toolholder 32	XXX	XXX	XXX	XXX
B_1		mm	35			
B_2		mm	60			
B_3		mm	48			
L_1		mm	85.5	85.5	88.5	88.5
H		mm	100			
Colour code for VDI shanks						

31 9149_30-UEK

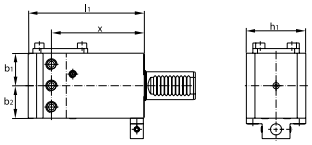
EWS VDI boring bar toolholder

For use on DMG Gildemeister CTX CNC lathes with radial turrets. Combination toolholder with capability for internal and external cooling.

Suitable for: DMG Gildemeister CTX.

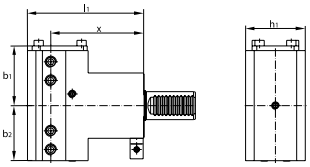
Application: For clamping boring bars.

Supplied with: Including **standard pin strip** for alignment.



31 9733

31 9735



Type			30-32-100	40-40-100	D30-32-100	D40-40-100
31V	31 9733	Combination toolholder for boring bar	XXX	XXX	–	–
31V	31 9735	Combination double toolholder for boring bar	–	–	XXX	XXX
x		mm	100			
l_1		mm	125	130	125	140
b_1		mm	35	42.5	64	63
b_2		mm	35	42.5	59	58
h_1		mm	64	76	64	76
Cooling			internal / external			
VDI			30	40	30	40

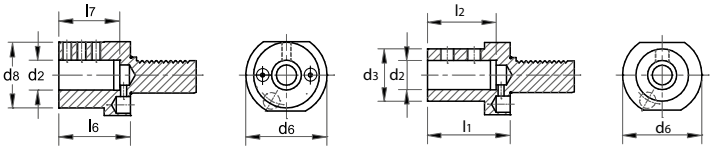
VDI toolholders

Form E1

Standard: **DIN 69880 / VDI 3425,** sheet 2.

Application: For drilling with indexable drill with internal coolant supply.

31 9150



Bore d_2 (H6)			mm	16	20	25	32	40	50	d_6 mm	Colour code for VDI shanks
32V	31 9150	HOLEX Indexable drill holder **Form E1**	VDI 20	XXX	XXX	(XXX)	–	–	–	50	
32V	31 9180		VDI 25	(XXX)	(XXX)	(XXX)	–	–	–	58	
32V	31 9200		VDI 30	XXX	XXX	XXX	XXX	XXX	–	68	
32V	31 9250		VDI 40	(XXX)	XXX	XXX	XXX	XXX	–	83	
32V	31 9255		VDI 50	–	XXX	XXX	XXX	XXX	XXX	98	
∅ d_3			mm	36	40	45	52	65	75		
l_1 -0.2			mm	67	67	75	71	90	100		
l_2			mm	54	54	59	63	73	83		

Colour code: VDI 30 VDI 40 VDI 20 VDI 25 VDI 50

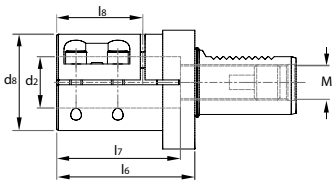
Form E2, slotted

- Wrapping around the boring bar, generates vibration damping and avoids vibration.
- Internal and external cooling available.

31 9275 – The boring bar can be inserted through when using shanks size 10 and 12.

31 9276 – The boring bar can be inserted through when using shanks size 10 and 20.

Note: Spare parts No. 319287 - 9288 can be found in the spare parts list.



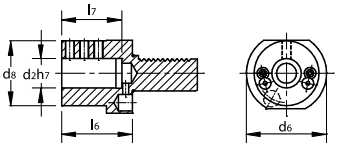
31 9275

Bore d_2 (H7)		mm	10	12	16	20	25	32	40	Colour code for VDI shanks
31V 31 9275	Garant Slotted boring bar holder **Form E2**	VDI 30	XXX	XXX	XXX	XXX	XXX	XXX	–	
31V 31 9276		VDI 40	XXX	XXX	XXX	XXX	XXX	XXX	XXX	
d_8		mm	45	45	45	55	55	65	75	
l_6		mm	90	90	90	108	108	130	160	
l_7 (31 9275)		mm	90	90	80	100	100	120	–	
l_7 (31 9276)		mm	95	95	95	100	100	120	150	
l_8		mm	50	50	50	63	63	80	100	
Thread M (31 9275)			M14×1.5	M14×1.5	M14×1.5	M14×1.5	M14×1.5	M14×1.5	–	
Thread M (31 9276)			M22×1.5							

Form E2

Standard: **DIN 69880 / VDI 3425,** sheet 2.

Application: For internal machining with boring bar holder.



31 9290

Bore d_2 (H7)		mm	6	8	10	12	16	20	25	32	40	50	d_6 mm	Colour code for VDI shanks
32V 31 9290	HOLEX Boring bar holder **Form E2**	VDI 16	XXX	XXX	XXX	XXX	XXX	–	–	–	–	–	40	
32V 31 9300		VDI 20	–	XXX	XXX	XXX	XXX	XXX	XXX	–	–	–	50	
32V 31 9325		VDI 25	–	XXX	XXX	XXX	XXX	XXX	XXX	–	–	–	58	
32V 31 9350		VDI 30	–	XXX	XXX	XXX	XXX	XXX	XXX	XXX	–	–	68	
32V 31 9400		VDI 40	–	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	83	
32V 31 9405		VDI 50	–	–	–	XXX	XXX	XXX	XXX	XXX	XXX	XXX	98	
d_8 (31 9290)		mm	–	32	32	40	40	–	–	–	–	–		
d_8 (31 9300)		mm	–	40	40	40	40	50	50	–	–	–		
d_8 (31 9325)		mm	–	40	40	40	40	58	58	–	–	–		
d_8 (31 9350)		mm	–	55	55	55	55	55	55	68	–	–		
d_8 (31 9400)		mm	–	55	55	55	55	55	55	83	83	83		
d_8 (31 9405)		mm	–	–	–	98	98	98	98	98	98	98		
l_6 (31 9290)		mm	–	44	44	44	44	–	–	–	–	–		
l_6 (31 9300, 31 9325)		mm	–	50	50	50	50	50	60	–	–	–		
l_6 (31 9350)		mm	–	61	60	60	60	60	60	75	–	–		
l_6 (31 9400)		mm	–	75	75	75	75	75	75	75	90	90		
l_6 (31 9405)		mm	–	–	–	90	90	90	90	90	90	100		
l_7 (31 9290)		mm	–	34	34	34	34	–	–	–	–	–		
l_7 (31 9300, 31 9325)		mm	–	41	41	41	41	41	51	–	–	–		
l_7 (31 9350)		mm	–	51	51	51	51	51	51	61	–	–		
l_7 (31 9400)		mm	–	61	61	61	61	61	61	61	76	76		
l_7 (31 9405)		mm	–	–	–	76	76	76	76	76	76	86		

Garant Toolholders for MAZAK QuickTurn Nexus 100/200/250, eco

- Case-hardened 58 HRC ± 2.
- All functional faces ground.
- With ball type coolant nozzles.

Suitable for:

Size 40/20 – for MAZAK QuickTurn Nexus 100IIM / MS / MY / MSY.

Size 40/20 – for MAZAK QuickTurn Nexus 200IIM / 250IIM / MS / MY / MSY (16 times).

Size 40/25 – for MAZAK QuickTurn Nexus 200IIM / 250IIM / MS / MY / MSY (12 times).

31 9195

Size = shank ∅ d_1 / tool shank		mm	40/20	40/25
31V 31 9195	eco axial tool mounting, forwards		XXX	XXX

Colour code: VDI 30 VDI 40 VDI 16 VDI 20 VDI 25 VDI 50

HOLEX Reducing sleeves for tools with plain shank

Suitable for VDI arbors form E2 (No. 319275 – 319405).

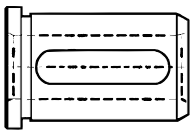
31 9426 – Suitable for internal cooling, not slotted. Tool is fixed and clamped with 2 clamping screws.

31 9428 – Slotted version - alignment of the tool via fixing screws, clamping via the boring bar holder.

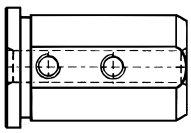
Application: For ∅ reduction for tools with plain shanks.

31 9426_25/12

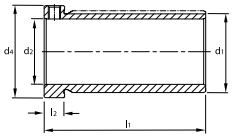
31 9428



Slot



Clamping pin



Shank ∅ d_1 / clamping ∅ d_2	mm	25/4	25/5	25/6	25/8	25/10	25/12	25/14	25/16	25/18	25/20
32V 31 9426	Reducing adapter	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
32V 31 9428	Slotted reducing adapter	–	–	–	XXX	XXX	XXX	XXX	XXX	XXX	XXX
∅ d_4 (31 9426)	mm	29									
∅ d_4 (31 9428)	mm	–	–	–	30	30	30	30	30	30	30
l_1 (31 9426)	mm	50									
l_1 (31 9428)	mm	–	–	–	60	60	60	60	60	60	60
l_2 (31 9426)	mm	4									
l_2 (31 9428)	mm	–	–	–	10	10	10	10	10	10	10
Version (31 9426)		Clamping pin	Clamping pin	Clamping pin	Clamping pin	Clamping pin	Clamping pin	Slot	Slot	Slot	Slot

Shank ∅ d_1 / clamping ∅ d_2	mm	32/5	32/6	32/8	32/10	32/12	32/14	32/16	32/18	32/20	32/25
32V 31 9426	Reducing adapter	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
32V 31 9428	Slotted reducing adapter	–	–	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
∅ d_4 (31 9426)	mm	40									
∅ d_4 (31 9428)	mm	–	–	37	37	37	37	37	37	37	37
l_1 (31 9426)	mm	58									
l_1 (31 9428)	mm	–	–	69	69	69	69	69	69	69	69
l_2 (31 9426)	mm	5									
l_2 (31 9428)	mm	–	–	10	10	10	10	10	10	10	10
Version (31 9426)		Pin	Pin	Pin	Clamping pin	Pin	Slot	Slot	Slot	Slot	Slot

Shank ∅ d_1 / clamping ∅ d_2	mm	40/6	40/8	40/10	40/12	40/14	40/16	40/18	40/20	40/25	40/32
32V 31 9426	Reducing adapter	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
32V 31 9428	Slotted reducing adapter	–	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
∅ d_4 (31 9426)	mm	44									
∅ d_4 (31 9428)	mm	–	45	45	45	45	45	45	45	45	45
l_1 (31 9426)	mm	58									
l_1 (31 9428)	mm	–	79	79	79	79	79	79	79	79	79
l_2 (31 9426)	mm	5									
l_2 (31 9428)	mm	–	10	10	10	10	10	10	10	10	10
Version (31 9426)		Clamping pin	Clamping pin	Clamping pin	Clamping pin	Slot	Slot	Slot	Slot	Slot	Slot

Shank ∅ d_1 / clamping ∅ d_2	mm	50/12	50/14	50/16	50/18	50/20	50/25	50/32	50/40
32V 31 9426	Reducing adapter	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
32V 31 9428	Slotted reducing adapter	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
∅ d_4 (31 9426)	mm	54							
∅ d_4 (31 9428)	mm	55							
l_1 (31 9426)	mm	75							
l_1 (31 9428)	mm	90							
l_2 (31 9426)	mm	5							
l_2 (31 9428)	mm	10							
Version (31 9426)		Clamping pin	Slot	Slot	Slot	Slot	Slot	Slot	Slot

Garant Quick-change boring bar system

Note: Pre-setting for instance using GARANT 35 4760 VG1 with reducer 35 4773 (sleeve 31 3291_25 with additional reducing adaptor 31 9426/9428_40/32).

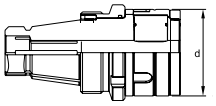
Quick change adapter

For direct adaption the quick-change toolholder is screwed into the cylindrical clamping sleeve or VDI toolholder by a clamping nut with an external thread.

Suitable for: Boring bars with 1, 2 or 3 drive flats.

Supplied with: Blanking screws for cooling channel holes, blind nuts.

31 9283



Clamping ∅		mm	4	6	8	10	12	16	20	25
31V 31 9283	Quick-change toolholder ER16	d=35	XXX	XXX	XXX	XXX	–	–	–	–
31V 31 9285	Quick-change toolholder ER25	d=42.5	–	–	XXX	XXX	XXX	XXX	–	–
31V 31 9286	Quick-change toolholder ER32	d=42.5	–	–	XXX	XXX	XXX	XXX	XXX	–
31V 31 9289	Quick-change toolholder ER40	d=64.5	–	–	–	–	XXX	XXX	XXX	XXX

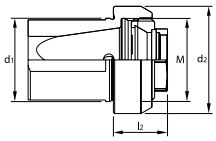
Cylindrical clamping sleeve

To accept the external diameter in a standard boring bar holder or indexable drill holder.

Supplied with: Including clamping nut with an external thread.

Note: ER collets can also be clamped directly.

31 9291



ER collet			16	25	32	40
31V 31 9291	Clamping sleeve, cylindrical		XXX	XXX	XXX	XXX
∅ d_1		mm	25	32	40	50
∅ d_2		mm	32.5	41.5	49.5	64
l_2 with exchangeable adapter		mm	40	49.5	53	60.5
l_2 with ER collet		mm	18	21	25.5	28

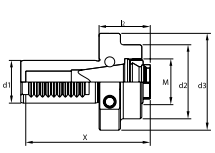
Axial toolholder for direct adaptation

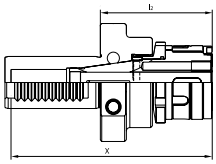
Quick-change adapters 31 9285/9286/9289 are screwed directly into the toolholder. A very stable combination with minimum overhang.

Supplied with: Including clamping nut with an external thread.

Note: ER collets can also be clamped directly.

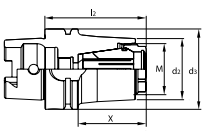
31 9292

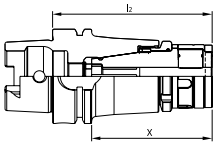




ER collet			25	32	40
31V 31 9292	VDI toolholder		XXX	XXX	XXX
∅ d_1		mm	30	40	40
∅ d_2		mm	52	58	65
∅ d_3		mm	68	83	83
l_2 with exchangeable adapter		mm	64.5	65.7	101
l_2 with ER collet		mm	36	39	69
x with exchangeable adapter		mm	116	125	158
x with ER collet		mm	87	98	125

31 9294





ER collet			32
31V 31 9294	Milling and turning chuck	HSK-T 63	XXX
31V 31 9295		PSC 63	XXX
∅ d_2		mm	48
∅ d_3		mm	63
l_2 with exchangeable adapter (31 9294)		mm	107
l_2 with exchangeable adapter (31 9295)		mm	103
l_2 with ER collet (31 9294)		mm	80
l_2 with ER collet (31 9295)		mm	76
x with exchangeable adapter (31 9294)		mm	81
x with exchangeable adapter (31 9295)		mm	89
x with ER collet (31 9294)		mm	54
x with ER collet (31 9295)		mm	62

Assembly block

For easy assembly the quick-change toolholders are placed in an assembly block. For mounting in a pre-setting device with an SK50 spindle.

Note: A suitable fitting jig 319299 can be found in the spare parts list.

31 9293

ER collet		16	25	32	40
31V 31 9293	Assembly block	XXX	XXX	XXX	XXX

Hydraulic arbors

Advantage:
- Ideal damping characteristics, resulting in optimum component surfaces and increased tool life.
- Quick and easy handling.
- Flexible use of reducing adapters.
- Perfect centring.

Application: Suitable for drilling, reaming, countersinking and also for use of boring bars.

ER hydraulic collet

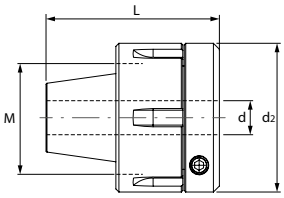
High flexibility for use with turning in static collet holders, but also when using driven tools.
Best run-out characteristics.

31 9742/9743 – For driven tools with external threads.

31 9746/9747 – For driven tools with internal threads.

31 9742

Ød		mm	12	16	20
31W 31 9742	ER hydraulic collet with clamping nut **ER25**		XXX	XXX	–
31W 31 9743	ER hydraulic collet with clamping nut **ER32**		XXX	–	XXX
Ø d_2 (31 9742)		mm	42	46	–
Ø d_2 (31 9743)		mm	50	–	50
L (31 9742)		mm	51	49	–
L (31 9743)		mm	58.3	–	58.3
Thread M (31 9742)			M32×1.5	M32×1.5	–
Thread M (31 9743)			M40×1.5	–	M40×1.5



31 9746

Ød		mm	12	16	20
31W 31 9746	ER hydraulic collet with internal thread **ER25**		XXX	XXX	–
31W 31 9747	ER hydraulic collet with internal thread **ER32**		XXX	–	XXX
Ø d_2 (31 9746)		mm	42	46	–
Ø d_2 (31 9747)		mm	50	–	50
L (31 9746)		mm	51	49	–
L (31 9747)		mm	58.3	–	58.3
Thread M (31 9746)			M32×1.5	M32×1.5	–
Thread M (31 9747)			M40×1.5	–	M40×1.5

Hydraulic arbor

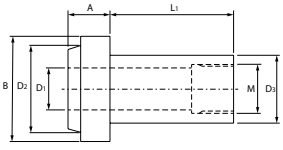
Unique clamp bridging, clamps h6 and h7 shanks. Laser finished on the end face and alignment screw on the bracket, for simple and clear orientation of the boring bar. Including length adjustment backstop screw. Suitable for through-coolant.

31 9751/9752 – Flexible use on all types of turret.

31 9753/9754 – Two attachment screws for the best accessibility, be it at the headstock or tailstock. Supplied with ball spray nozzle.

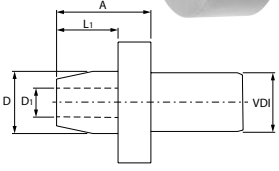
31 9751

ØD_1		mm	16	20	25
31M 31 9751	Hydraulic arbor **Shank Ø 32 mm**		XXX	XXX	–
31M 31 9752	Hydraulic arbor **Shank Ø 40 mm**		XXX	XXX	XXX
Dimension A		mm		19.5	
Ø D_2 (31 9751)		mm	41	41	–
Ø D_2 (31 9752)		mm		46	
Ø D_3 (31 9751)		mm	32	32	–
Ø D_3 (31 9752)		mm		40	
L_1 (31 9751)		mm	59	59	–
L_1 (31 9752)		mm		69	
B (31 9751)		mm	50	50	–
B (31 9752)		mm		56	
M			M22×1	M22×1	M27×1



31 9753

ØD_1			mm	20
31M 31 9753	Hydraulic arbor **VDI 30**	**VDI 30**		XXX
31M 31 9754	Hydraulic arbor **VDI 40**	**VDI 40**		XXX
Dimension A			mm	64
Ø D			mm	42
L_1			mm	42



VDI toolholders

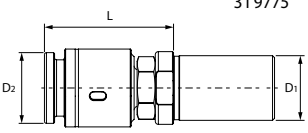
VDI stop damper

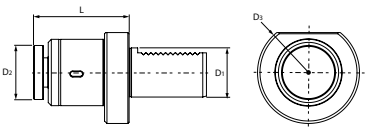
Application: Sturdy bar stop with spring damping, ground back-stop disc.
Damping compensation of maximum 3 mm.

31 9775 – **Cylindrical version** suitable for all types of turret.
Plain shank with length adjustment.

31 9777 – **VDI variant** primarily for disc turrets.

31 9775





31 9777

Shank ∅D_1			mm	25	32	30	40
31V 31 9775	Garant	Stop damper with spring **cylindrical**		XXX	XXX	–	–
31V 31 9777	Garant	Stop damper with spring **VDI**		–	–	XXX	XXX
∅ D_2			mm	35	35	35	44
∅ D_3			mm	–	–	68	83
L			mm	62	62	70	78
L_{max}			mm	100	100	–	–
Colour code for VDI shanks				–	–		

Quick-change tapping chuck for right- and left-hand threads

31 9445/9447 – Resilient length compensation, smooth action due to ball bearing sleeve.

31 9736/9737 – Minimum length compensation, quick-change tapping collets for ER collets.

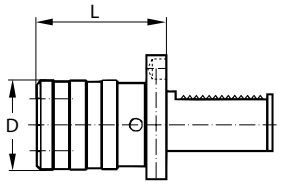
Standard: **DIN ISO 10889 / DIN 69880** and **VDI 3425,** sheet 2.

Optional extras:

31 9445/9447 – **Quick-change tapping collets** No. 335420 – 335620.

31 9736/9737 – **Quick-change tapping collets** No. 338120.

31 9445



31 9736

Shank ∅ d			mm	20	30	40	Length compensation by compression mm	Length compensation by tension mm	∅ D mm	L mm
32P 31 9445	HOLEX	Quick-change tapping chuck **M3 – M12**		XXX	XXX	XXX	7	7	38	55
32P 31 9447	HOLEX	Quick-change tapping chuck **M6 – M20**		–	XXX	XXX	12	12	54	86
31P 31 9736	Garant	Synchro quick-change tapping chuck **M1 – M12**		–	XXX	XXX	0.2	1	43	46
new 31P 31 9737	Garant	Synchro quick-change tapping chuck **M6 – M20**		–	XXX	XXX	0.2	1	60	67
Colour code for VDI shanks										

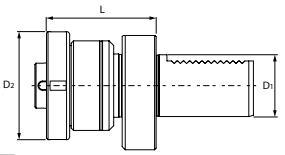
Die toolholder

Robust toolholder, all functional faces hardened and ground.
Length compensation by compression and tension for cutting external threads exactly true to gauge size.
To take standard DIN dies (round version).

Application: Cutting external threads by means of a die.
For use primarily on lathes, but also suitable for milling machines.

Optional extras: Die adapter no. 319795.

31 9790



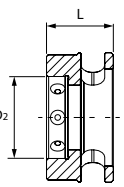
31 9793

Shank ∅D_1			mm	30	40	25
31V 31 9790	Garant	Die toolholder with length compensation **cylindrical**		–	–	XXX
31V 31 9793	Garant	Die toolholder with length compensation **VDI**		XXX	XXX	–
∅ D_2			mm	70	70	71
Length compensation by compression			mm		4	
Length compensation by tension			mm		12	
L			mm	71	73	55
Colour code for VDI shanks						–

Die adapter

Adapter to take dies to DIN EN 22568 (round version).

Suitable for: Die toolholder No. 319790 / 9793.



31 9795

for threads				M3-M6	M7-M9	M10	M12-M14
31V 31 9795	Garant	Die adapter **Exchangeable insert**		XXX	XXX	XXX	XXX
∅ D_2			mm	20	25	30	38
L			mm		16		

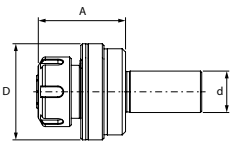
Colour code: VDI 30 VDI 40 VDI 20

Compensating holder

Compensating holder with ER collet adaption. **Radial play adjustable** via a compression spring and **5° angular compensation adjustment** of the tool. With through coolant feed.

Application: Optimum for compensating alignment errors between workpiece and tool, for instance when reaming or tapping (without tension / compression compensation). For use primarily on lathes, but also suitable for milling machines.

31 9780



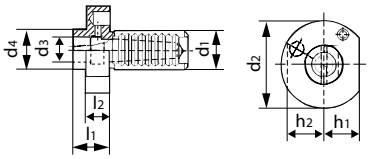
31 9785

Type			20-16	25-25	25-32	30	40
31V 31 9780	Garant	ER compensating floating holder **Cylindrical**	XXX	XXX	XXX	–	–
31V 31 9785		ER compensating floating holder **VDI**	–	–	–	XXX	XXX
∅ d		mm	20	25	25	30	40
Dimension A		mm	44	53	58	64	74
∅ D		mm	42	57	69	68	83
Radial compensation		mm	1	1	1.5	1	1.5
suitable for ER size			16	25	32	25	32
Colour code for VDI shanks			–	–	–		

Toolholder Form F

Application: For tools with MT shank.

31 9740



for MT shank			1	2	3	4	Colour code for VDI shanks
36A 31 9740	Toolholder with taper arbor **Form F**	VDI 30	XXX	XXX	XXX	–	
36A 31 9745		VDI 40	–	XXX	XXX	(XXX)	
d_2 (31 9740)		mm	68	68	68	–	
d_2 (31 9745)		mm	–	83	83	83	
d_3		mm	12.065	17.78	23.825	31.267	
∅ d_4 (31 9745)		mm	–	55	58	68	
l_1 (31 9740)		mm	27	27	66	–	
l_1 (31 9745)		mm	–	36	36	80	

Blanking plug Form Z2

31 9770

∅ d_1		mm	16S	20S	25S	30S	40S	50S	16K	20K	25K	30K	40K
36A 31 9770	Blanking plug **Form Z2**		XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
Material			Steel	Steel	Steel	Steel	Steel	Steel	Plastic	Plastic	Plastic	Plastic	Plastic
Colour code for VDI shanks													

HOLEX® Bar holder

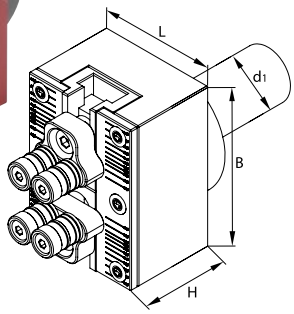
- Anodised housing of high-tensile aluminium with diamond dust-coated roller bodies.
- Steplessly adjustable from 1 – 70 mm.
- Suitable for round, hexagonal and square material.
- Integral adjustment aid with scales.
- General-purpose cylindrical bar holder.

Advantage: For quick adjustment to the material diameter.

Application: Suitable for disc turrets and radial turrets.

Supplied with: Bar gripper with roller bodies, interchangeable jaws and L-wrench for hexagon socket screws for changing the roller bodies and interchangeable jaws.

Note: Suitable VDI adaptor in the spare parts list, see No. 319707 size 20 / 30.



Shank ∅ d_1		mm	25
32B 31 9705	Bar holder		XXX
Length		mm	55
Width		mm	75
Height		mm	42

Colour code: VDI 30 | VDI 40 | VDI 16 | VDI 20 | VDI 25 | VDI 50

Bar holder

- New type of bar holder concept – permits both lateral and frontal gripping.
- It permits automatic use in machine operation and programmed cycles, with hydraulic actuation of the grippers by coolant pressure (3 – 50 bar).
- High-quality components: anodised aluminium base body, wearing components of hardened and ground steel or hard machined steel.
- Unique mechanism with double ball guidance and double piston principle for maximum wear resistance and capability to handle heavy workpieces (traction 26 kg, lifting 16 kg).

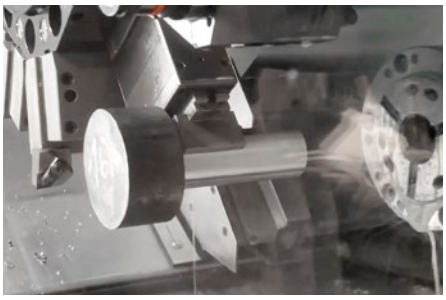
Advantage:
- No traces of scratches on the component (even when gripping finished parts).
- Lateral gripping – the gripper can be brought extremely close to the lathe chuck.
- Movement of heavy weights.
- Extremely flexible – various bolt-on adapters allow the gripper to be used on both VDI turrets and also BMT turrets. Jaws interface 1/16 inch× 90°, thus standard top jaws can be used.
- The pressure and hence the gripping force are configurable to an extent (75 – 100 %).
- Exceptionally low-maintenance.

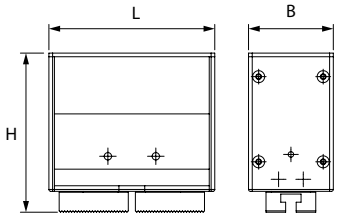
Application: Drawing the bar into the machine, including for machines without a bar loader. Finished components can be automatically removed and handed over from the headstock to the tailstock. Clamping range (with jaws No. 319718) 8 – 65 mm.

Optional extras: Adapters No. 319713 / 9714 / 9716, top jaws No. 319718.

Note: For programming instructions see the operating instructions.

31 9711

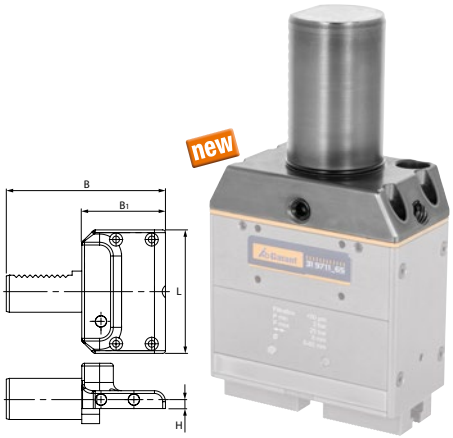




max. workpiece ∅		mm	65
31V	31 9711	Bar holder	XXX
Length		mm	90
Width		mm	46
Height		mm	85.6

Adapter for VDI radial turret

Suitable for: Bar holder No. 319711.

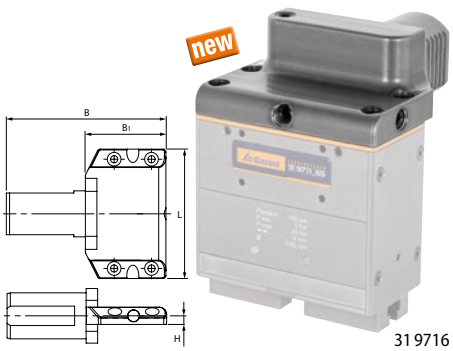


31 9714

Type			30	40
31V	31 9714	VDI adapter	XXX	XXX
Length L		mm	90	
Width B		mm	50	52
Height H		mm	20	

Angled adapter for VDI disc turret

Suitable for: Bar holder No. 319711.

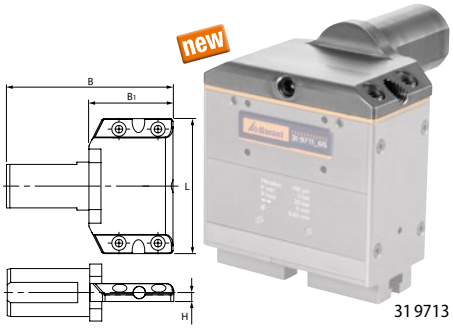


31 9716

Type			30-A	40-A
31V	31 9716	VDI adapter, angled	XXX	XXX
Length L		mm	90	
Width B		mm	116	124
B_1		mm	61	
Height H		mm	7	

Angled adapter for shank Ø 32

Suitable for: Bar holder No. 319711.

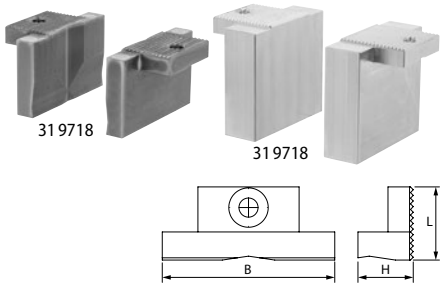


Shank Ø D_1		mm	32
31V 31 9713	Bar holder adapter		XXX
Length L		mm	90
Width B		mm	111
B_1		mm	56
Height H		mm	6

Jaws for bar holder

Suitable for: Bar holder No. 319711.

Note: Standard jaw serration 1/16 inch × 90°.
Size ALU – Soft jaws for in-house machining.

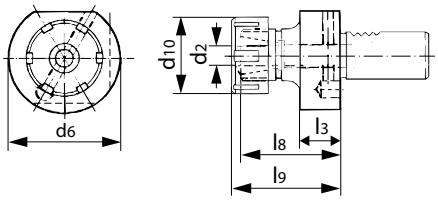


Clamping range		mm	8-20	20-45	45-65	ALU
31V 31 9718	Top jaws for bar holders		XXX	XXX	XXX	XXX
Length L		mm	19.5	19.5	19.5	27
Width B		mm	46			
Height H		mm	14.75	14.75	42.75	42.75

HOLEX® VDI toolholders

Standard: **ISO 10889 / DIN 69880 / VDI 3425,** sheet 2.
Application: Mainly for drilling and centring.

Collet chucks form E3 and E4

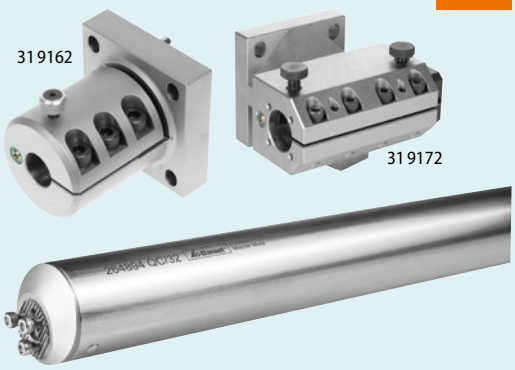


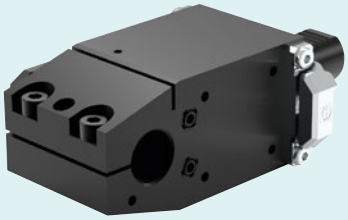
Type			1,5-16	1,5-25	3,5-32	Colour code for VDI shanks
32V 31 9500	OZ collet chuck **Form E3**	**VDI 30**	(XXX)	XXX	–	
32V 31 9550		**VDI 40**	–	(XXX)	(XXX)	
suitable collets			415 E	462 E	467 E	
Clamping range d_2		mm	2 – 16	2 – 25	4 – 32	
Ø d_6 (31 9500)		mm	68	68	–	
Ø d_6 (31 9550)		mm	–	83	83	
l_9		mm	57	75	90	

for ER collets		ER	16	25	32	40	Colour code for VDI shanks
32V 31 9600	ER collet chuck **Form E4**	**VDI 20**	XXX	XXX	–	–	
32V 31 9650		**VDI 30**	–	XXX	XXX	–	
32V 31 9700		**VDI 40**	–	–	XXX	XXX	
suitable collets			426 E (ER16)	430 E (ER 25)	470 E (ER 32)	472 E (ER 40)	
Clamping range d_2		mm	1 – 10	1 – 16	2 – 20	3 – 26	
d_6 (31 9600, 31 9700)		mm	50	50	83	83	
d_6 (31 9650)		mm	–	68	68	–	
l_9 (31 9600, 31 9700)		mm	17	50	62	75	
l_9 (31 9650)		mm	–	57	62	–	

Garant® Mounting systems for vibration damping tools

Boring bar holder for vibration damping boring bars such as GARANT Master Mute – available on request from Hoffmann, suitable for the relevant type of turret.
Alternative modular boring bar holder system for disc turrets (No. 31 9162 – 9164) or radial turrets (No. 31 9172 – 9174).
Suitable for vibration damping boring bars GARANT Master Mute.



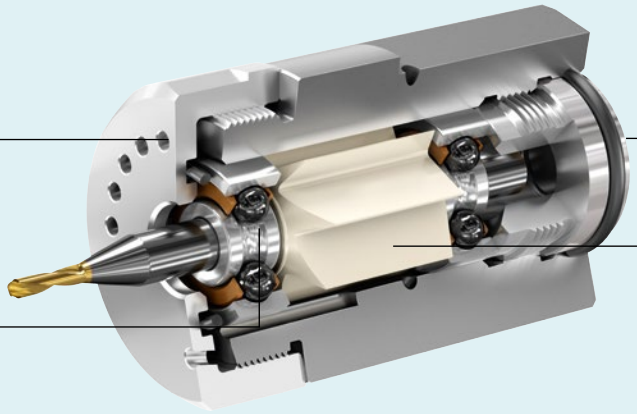


Colour code: VDI 30 VDI 40 VDI 20

High-speed spindle – bring your lathe up to speed

Precondition
- Coolant pressure 10 – 60 bar.
- Filtered coolant.
- In the best case arbors with zero loss of coolant (e.g. collet, hydraulic chucks), but Weldon arbors and boring bar holders can also be used.
- Arbor with through coolant supply.

Result – increased rotational speeds
- Increases the life time of the tool.
- Better surfaces on the workpieces.
- Time saving due to higher feed rates v_f.
- Protection of the driven tools in the turret.
- Energy saving
  → Optimisation of the rotational speeds up to 75,000 rpm.



CoolSpeed® High-speed spindle

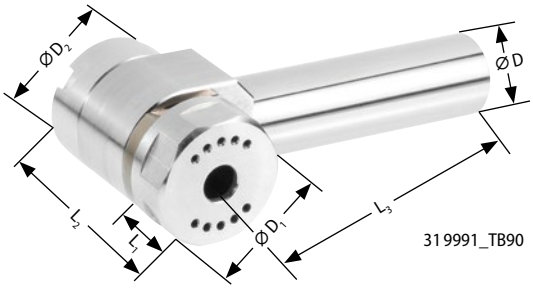
31 9991 – High-speed spindle, driven by coolant (10 – 60 bar), speeds up to 75,000 rpm.

Application:

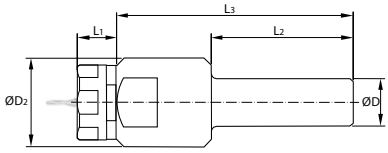
31 9991 – Increased feed rate and cutting speed, for use above all with small-diameter tools (shank Ø 3 – 6 mm). For use for drilling, deburring, engraving, and milling to a restricted degree.

Note:

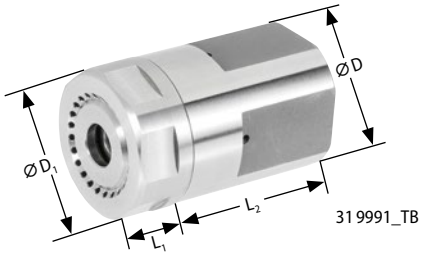
31 9991 – Calculator for determining the desired speeds:
https://sfi-toodle.com/calculator-toodle-blue/
Assembly of the headstock:
https://sfi-toodle.com/assembly-procedures/
Cutting data calculation/recommended speed:
https://sfi-toodle.com/metal-cutting-calculations/



31 9991_TB90



31 9991_TBL



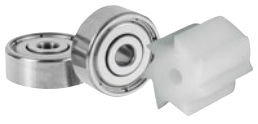
31 9991_TB

Size		Type	TB	TBL	TB90
36D 31 9991	Spindle housing		XXX	XXX	XXX
Ø D		mm	25	16	16
Ø D_1		mm	25.5	25	25.5
L_1		mm	10	13.5	13.5
L_2			30	48	40
L_3			–	80	70
Ø D_2			–	30	25

Tool shank diameter		mm	3	4	6
36D 31 9992	Bearing/turbine set for spindles of type TB		XXX	XXX	XXX

Tool shank diameter		mm	3	4	6
36D 31 9993	Assembly set for spindles of type TB		XXX	XXX	XXX

31 9993


31 9992

Note: Necessary for determination of the pressure at your spindle or turret, to determine the desired speed.

Type		PK25
36D 31 9994	Pressure gauge for spindles of type TB	XXX

31 9994

VDI toolholders

Precision short drill chuck for clockwise and anticlockwise rotation

- Coolant supply via indexing bore.
- Maximum coolant pressure 50 bar.

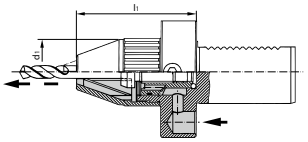
31 9715/9725 – ■ **GARANT type** with Torx® clamping wrench for high clamping force.

Standard: **DIN ISO 10889 / DIN 69880 / VDI 3425,** sheet 2.

Application: On NC turning machines and machining centres.

Note:
31 9710 – Coolant pressure of at least 4 bar is necessary.

31 9710

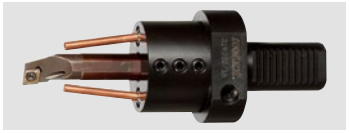


31 9715

Clamping range		mm	1-13	1-16	Colour code for VDI shanks
36D 31 9710	Short drill chuck	VDI 20	(XXX)	–	
31B 31 9715	Short drill chuck	VDI 30	–	XXX	
31B 31 9725	Short drill chuck	VDI 40	–	XXX	
d_1		mm	43	50.5	
l_1		mm	81	90	
Chuck key			hexagon	TX25	

Coolant pipe for VDI arbors

Application: In VDI arbors in ball type coolant nozzles with metric threads.



31 9115

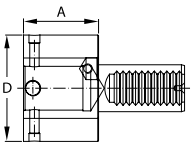
31 9118

Type		3,5×50	5×50	5×100	6×50	6×100
36D 31 9115	VDI coolant pipe, copper	XXX	XXX	XXX	XXX	XXX
36D 31 9118	VDI coolant pipe, stainless steel	XXX	XXX	XXX	XXX	XXX
Thread size		M3.5	M5	M5	M6	M6
Overall length	mm	50	50	100	50	100
Colour code for VDI shanks						

EWS Static holder for axial and radial use – VARIA / VARIA VX

Standard: DIN ISO 10889 / DIN 69880 / VDI 4325, sheet 2.

Suitable for: Inserts VARIA No. 319801 – 319838, 319872 – 319874.



31 9852

31 9853

VDI / VARIA		25/V3	30/V3	40/V4
33E 31 9852	Axial holder static VARIA	(XXX)	(XXX)	(XXX)
External ∅ D	mm	58	68	83
Dimension A	mm	60	60	67
Colour code for VDI shanks				

VDI / VARIA		25/VX3	30/VX3	40/VX4
33E 31 9853	Axial holder static VARIA VX	(XXX)	(XXX)	(XXX)
External ∅ D	mm	65	68	83
Dimension A	mm	64	64	71
Colour code for VDI shanks				

EWS Inserts VARIA and mounting blocks

Mounting block

Application: For mounting EWS VARIA inserts.

31 9876

suitable for arbor		V3	V4	V5
33E 31 9876	Mounting block VARIA	XXX	XXX	XXX
suitable for arbor		V3	V4	V5

VARIA VX inserts

Application: For mounting EWS-VARIA VX inserts.

31 9877

suitable for arbor		VX3	VX4
33E 31 9877	Mounting block VARIA VX	XXX	XXX
suitable for arbor		VX3	VX4

Colour code: VDI 20 VDI 30 VDI 40 VDI 25

EWS Inserts VARIA and VARIA VX

Advantage:
- Quick change using a single clamping point, therefore tool change without risk of injury.
- Cutter tools lie pre-set at the machine.
- Compact design - low unit costs.

Note: Maximum tightening torque for VX3 and VX4 is 5.7 Nm, which can be achieved using the appropriate torque wrench No. 211750_5.7. Maximum tightening torque for V3, V4 and V5 is 10 Nm. When releasing the deposits, do not travel beyond the stop.

Try it for yourself! Simply at
www.hoffmann.ews-tools.com
Benefit from comprehensive information.
Send a specific tooling enquiry.

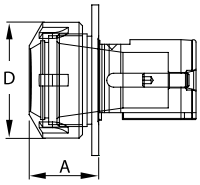
ER collet inserts – VARIA / VARIA VX – with internal cooling

31 9802/9804 – **VX** – Three-point clamping of the integral segment ring, free of transverse forces. **Polygon torque resistance up 200 Nm.**

Application: Mainly for drilling and centring.

31 9802

31 9801



for ER collets		ER	16	20	25	32	40
33E 31 9801	ER collet chuck VARIA	V3	XXX	XXX	XXX	XXX	–
33E 31 9802	Varia collet chuck VARIA VX3	VX3	XXX	XXX	XXX	XXX	–
33E 31 9803	ER collet chuck VARIA	V4	XXX	XXX	XXX	XXX	–
33E 31 9804	Varia collet chuck VARIA VX4	VX4	(XXX)	XXX	XXX	XXX	XXX
33E 31 9805	ER collet chuck VARIA	V5	–	–	XXX	XXX	XXX
Dimension A (31 9801, 31 9802)		mm	27	27	30	63	–
Dimension A (31 9803, 31 9804)		mm	30	25	30	30	57
Dimension A (31 9805)		mm	–	–	30	30	30
∅ D		mm	28	34	42	50	63

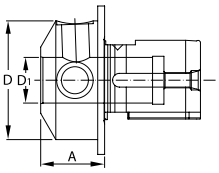
Weldon / Whistle Notch inserts – VARIA / VARIA VX – with internal cooling

31 9823/9827 – **VX** – Three-point clamping of the integral segment ring, free of transverse forces. **Polygon torque resistance up to 200 Nm.**

Application: For clamping tools with drive flats.

31 9821

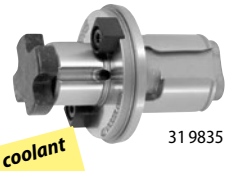
31 9823



Clamping range ∅ D_1		mm	6	8	10	12	16	20	25	32
33E 31 9821	Indexable drill toolholder VARIA	V3	XXX	XXX	XXX	XXX	XXX	–	–	–
33E 31 9823	Indexable drill toolholder VARIA VX3	VX3	XXX	XXX	XXX	XXX	XXX	XXX	(XXX)	–
33E 31 9825	Indexable drill toolholder VARIA	V4	XXX	XXX	XXX	XXX	XXX	XXX	XXX	–
33E 31 9827	Indexable drill toolholder VARIA VX4	VX4	XXX	XXX	XXX	XXX	XXX	XXX	XXX	–
33E 31 9829	Indexable drill toolholder VARIA	V5	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
Dimension A (31 9821, 31 9823)		mm	16	17	26	26	28	28.5	32	–
Dimension A (31 9825, 31 9827)		mm	16	19	26	26	28	28	32	–
Dimension A (31 9829)		mm	19	22	29	31	31	31	36	56
∅ D (31 9821, 31 9823)		mm	25	25	42	42	48	34	42	–
∅ D (31 9825, 31 9827)		mm	25	25	42	42	48	52	42	–
∅ D (31 9829)		mm	25	28	35	42	48	52	65	72

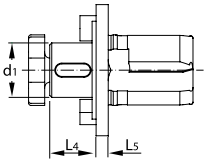
Milling cutter spigot inserts – VARIA / VARIA VX

31 9835/9838 – **VX** – Three-point clamping of the integral segment ring, free of transverse forces. **Polygon torque resistance up to 200 Nm.**


31 9835

With through coolant feed on request

31 9841



Spigot ∅ d_1		mm	16	22	27
33E 31 9835	Axial milling cutter spigot VARIA VX3	VX3	XXX	(XXX)	(XXX)
33E 31 9838	Axial milling cutter spigot VARIA VX4	VX4	XXX	XXX	(XXX)
33E 31 9841	Axial milling cutter spigot VARIA	V5	(XXX)	(XXX)	(XXX)
L_4 (31 9835, 31 9838)		mm	25	27	29
L_4 (31 9841)		mm	19	21	33
L_5 (31 9835)		mm	4	4	4.5
L_5 (31 9838)		mm		4	
L_5 (31 9841)		mm	6	6	10

Driven tools (AGW)

For use on all **DMG Gildemeister CTX** CNC lathes with **Sauter** turret. Drive coupling **DIN 5480**.
Clamping of tools in driven tool using ER collet with external nut or VARIA VX quick-change system under license from EWS.
External cooling via a coolant tube, internal cooling through the tool centrally through the spindle. Maximum speed 8000 rpm.

Suitable for: DMG Gildemeister CTX. In some cases, Emco, Hardinge, Monforts, Scherer etc. with DIN 5480.

Advantage:
- Weight- and geometry-optimized design.
- Process reliability through high-quality components, longevity.
- High torque transmission.
- 100% control – each driven tool is subjected to a run-in programme.
- Internal cooling: specially developed and patented seal.

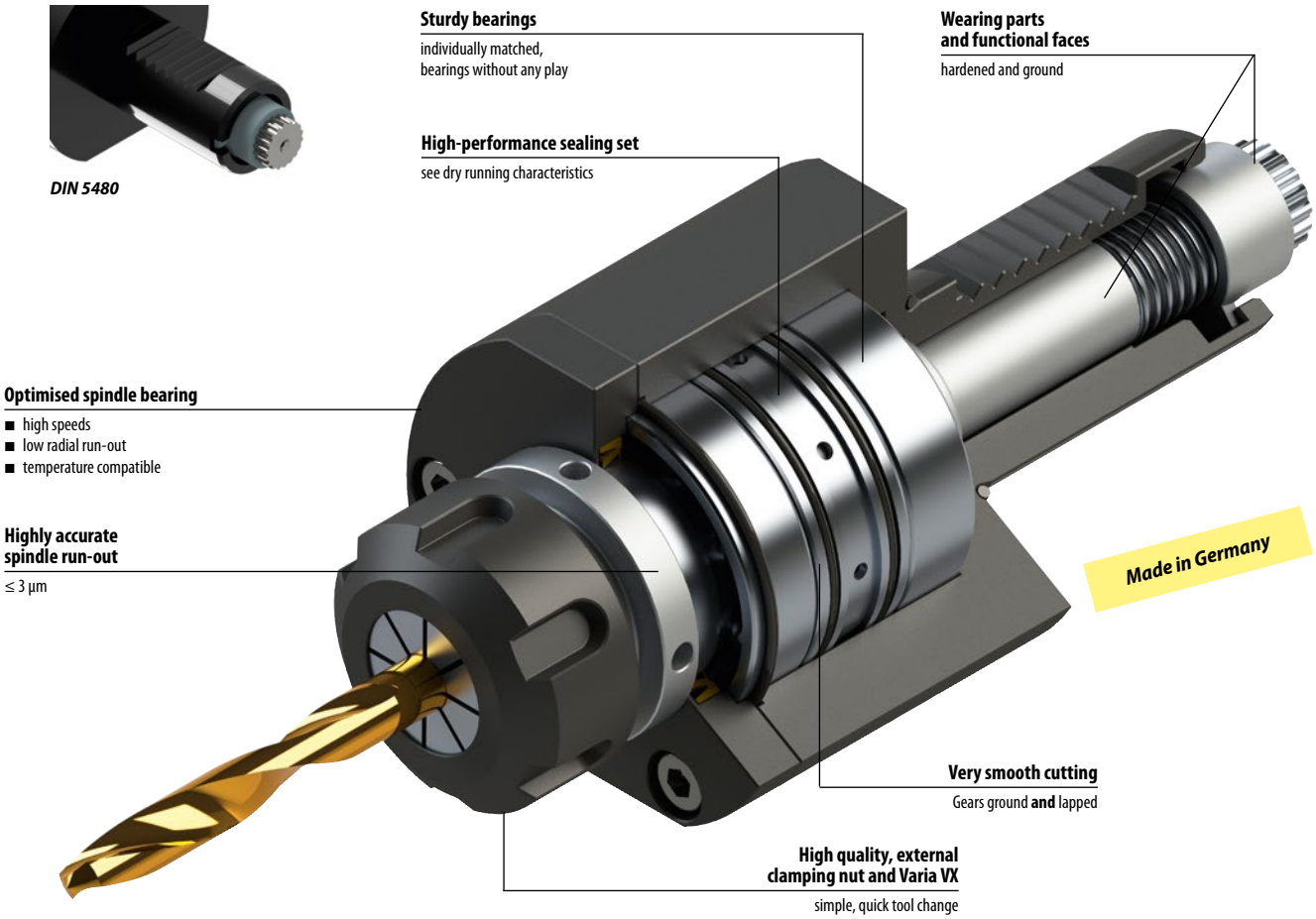
Application: As many machining steps as possible in one clamping set-up. Where space (available clamping positions) in the revolver is at a premium.

Supplied with: Driven tool for collet: including clamping nut and hook spanner. Driven tool VARIA VX: including chuck key.

Optional extras: Suitable inserts, Varia VX No. 319802 – 319888, ER collets No. 308941 – 309878, ER chuck keys No. 309680 – 309745.

Note:
- Other drive types (such as DIN 5482), ratios, dimensions, BMT etc. on request, see: www.hoffmann.ews-tools.com
- IC tools (with through cooling) will not run dry with standard seal, coolant filtering < 50 µm.
- Recommendation: Tighten version VARIA VX with a torque tool (max. 6 Nm).

DIN 5480



Driven tools with "CyberCon4" sensor system

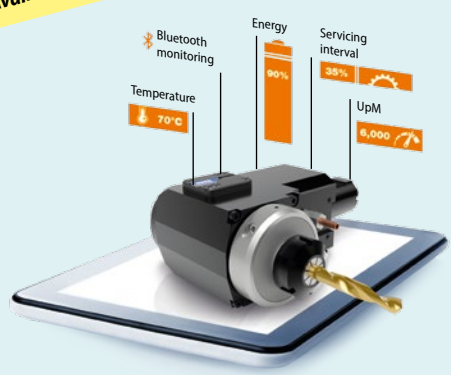
- Rotational speed and temperature: Live mode display
- Statistical values are stored on the tool chip
- Displays whether the tool is flooded with coolant if the seal is defective
- Switching on and off (overall cycles counter)
- Displays the total operating hours
- Records the longest machining cycle
- Intelligent service counter

Information such as rotational speed or temperature can be checked directly during operation of the driven tool.

Further information (statistics, counter etc.) can subsequently be downloaded from the stored data on the driven tool.

The data can be visualised on a mobile device (such as a mobile phone or tablet) in conjunction with an app suitable for the purpose.

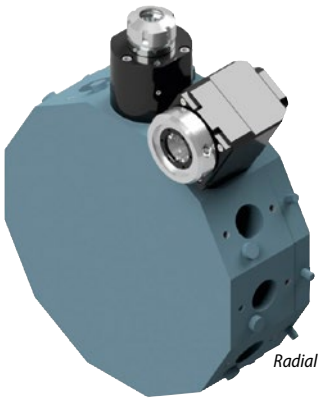
Available on request



Driven tools - axial version - for DMG CTX

Version IKC – with ceramic seal set, pressures up to 70 bar, with full dry-run capability.
Version IM – with internal clamping nut.
For use on both disc and radial turrets. Ratio 1:1. Version with internal cooling (internal) max. 25 bar.

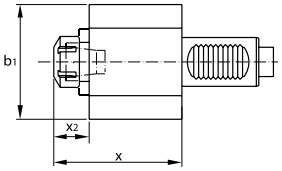
Special IKC seal for high pressures and dry machining

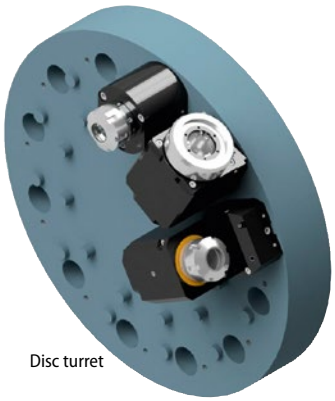

Radial turret

31 9902

31 9901

31 9901




Disc turret

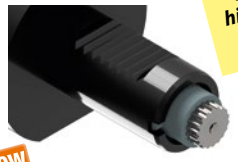
Type			30-ER25	30-ER25-IK	30-ER25IKC	30-ER25-IM (new)	30-25IKCIM (new)	30-VX3	30-VX3-IK	30-VX3IKC	VDI	Tool clamping
31W 31 9901	Driven tool, axial	ER25	XXX	XXX	XXX	XXX	XXX	–	–	–	30	ER25
31W 31 9902		VX3	–	–	–	–	–	XXX	XXX	XXX	30	VX3
b_1		mm	70	70	70	68	68	68	68	68		
x		mm	90	90	93.5	64.9	74.9	64.5	64.5	79		
x_1		mm	–	–	–	–	–	68.5	68.5	79		
x_2		mm	32	32	32	9.9	16.4	48.5	48.5	20.5		
Cooling			external	internal	internal	external	internal	external	internal	internal		
maximum pressure		bar	25	25	70	25	70	25	25	70		

Type			40-ER32	40-ER32-IK	40-ER32IKC	40-ER32-IM (new)	40-32IKCIM (new)	40-VX4	40-VX4-IK	40-VX4IKC	VDI	Tool clamping
31W 31 9903	Driven tool, axial	ER32	XXX	XXX	XXX	XXX	XXX	–	–	–	40	ER32
31W 31 9904		VX4	–	–	–	–	–	XXX	XXX	XXX	40	VX4
b_1		mm	94	94	85	132	132	85	85	85		
x		mm	113	113	102	79.1	79.1	80	80	80		
x_1		mm	–	–	–	–	–	84	84	84		
x_2		mm	37	37	37	16.2	16.2	64.7	64.7	64.7		
Cooling			external	internal	internal	external	internal	external	internal	internal		
maximum pressure		bar	25	25	70	25	70	25	25	70		

Driven tools - radial version of disc turret - for DMG CTX

For use on **disc turrets**. Right-hand version. Ratio 1:1. Version with internal cooling (internal) max. 70 bar.
Alignment using **standard-pin bar.**
Version IKD – with ceramic seal set, pressures up to 70 bar, with full dry-run capability.
Version IM – with internal clamping nut.
31 9917/9919/9925/9927 – Recessed version for more machining space.

DIN 5480



Special IKD seal for high pressures and dry machining

Standard pin strip

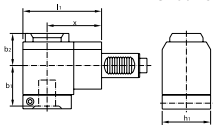
Type			30-25-R	30-25-RIKD (new)	30-25-R-IM (new)	3025RIKDIM (new)	30-VX3-R	30-VX3RIKD (new)	VDI	Tool clamping
31W 31 9915	Driven tool, radial	ER25	XXX	XXX	XXX	XXX	–	–	30	ER25
31W 31 9916		VX3	–	–	–	–	XXX	XXX	30	Varia VX3
l_1		mm	81	81	81	81	89	89		
b_1		mm	67	67	59.4	59.4	69.5	69.5		
b_2		mm	41	41	41	46	41	41		
h_1		mm	64	64	64	64	68	68		
x		mm	55							
Cooling			external	internal	external	internal	external	internal		

Type			Z30-25-R	Z30-25RIKD (new)	Z30-25R-IM (new)	Z3025IKDIM (new)	Z30-VX3-R	Z30VX3RIKD (new)	VDI	Tool clamping
31W 31 9917	Driven tool, radial recessed	ER25	XXX	XXX	XXX	XXX	–	–	30	ER25
31W 31 9919		VX3	–	–	–	–	XXX	XXX	30	Varia VX3
l_1		mm	96	96	96	96	106	106		
b_1		mm	32	32	15	15	32	32		
b_2		mm	83.5	83.5	83.5	88.5	83.5	83.5		
h_1		mm	64	64	64	64	68	68		
x		mm	55	55	70	70	55	55		
Cooling			external	internal	external	internal	external	internal		

31 9915

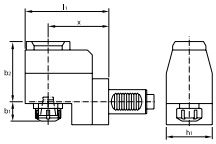
Type			40-32-R	40-32-RIKD (new)	40-32-R-IM (new)	4032RIKDIM (new)	40-VX4-R	40-VX4RIKD (new)	VDI	Tool clamping
31W 31 9921	Driven tool, radial	ER32	XXX	XXX	XXX	XXX	–	–	40	ER32
31W 31 9923		VX4	–	–	–	–	XXX	XXX	40	Varia VX4
l_1		mm	138							
b_1		mm	85	85	73.6	73.6	76.5	76.5		
b_2		mm	53	53	53	57.5	53	53		
h_1		mm	76							
x		mm	100							
Cooling			external	internal	external	internal	external	internal		

31 9916



Type			Z40-32-R	Z40-32RIKD (new)	Z40-32R-IM (new)	Z4032IKDIM (new)	Z40-VX4-R	Z40VX4RIKD (new)	VDI	Tool clamping
31W 31 9925	Driven tool, radial **recessed**	ER32	XXX	XXX	XXX	XXX	–	–	40	ER32
31W 31 9927		VX4	–	–	–	–	XXX	XXX	40	Varia VX4
l_1		mm	138							
b_1		mm	34.5	34.5	24.6	22.6	31.5	31.5		
b_2		mm	99.5							
h_1		mm	76							
x		mm	100							
Cooling			external	internal	external	internal	external	internal		

31 9917



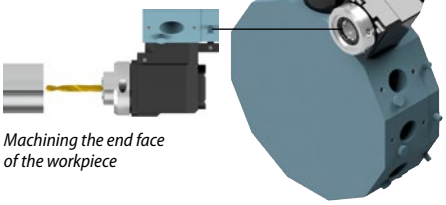
Driven tools - radial version of radial turret - for DMG CTX

For use on **disc turrets**. Left-hand version, i.e. machining in the direction of the main spindle.
Ratio 1:1. Version with internal cooling (internal) max. 70 bar.
Version IKD – with ceramic seal set, pressures up to 70 bar, with full dry-run capability.

31 9931–9937 – Standard alignment rail (pin).
31 9939–9949 – Stop rail (42.5 TOEM).
31 9957–9963 – OT rail.

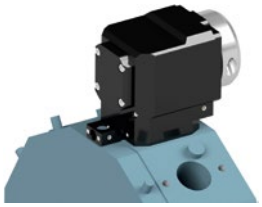
Type			30-25-L	30-25-LIKD (new)	30-VX3-L	30-VX3LIKD (new)	VDI	Tool clamping
31W 31 9931	Driven tool, radial, standard pin	ER25	XXX	XXX	–	–	30	ER25
31W 31 9933		VX3	–	–	XXX	XXX	30	Varia VX3
l_1		mm	126	126	134	134		
b_1		mm	67	67	69.5	69.5		
b_2		mm	41	59.5	41	59.5		
h_1		mm	64	64	68	68		
x		mm	100	126	100	134		
Cooling			external	internal	external	internal		

Special IKD seal for high pressures and dry machining



Machining the end face of the workpiece

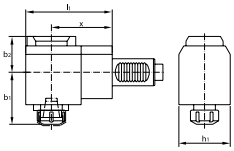
Type			40-32-L	40-32-LIKD (new)	40-VX4-L	40-VX4LIKD (new)	VDI	Tool clamping
31W 31 9935	Driven tool, radial, standard pin	ER32	XXX	XXX	–	–	40	ER32
31W 31 9937		VX4	–	–	XXX	XXX	40	Varia VX4
l_1		mm	138					
b_1		mm	85	85	76.5	76.5		
b_2		mm	53	72	53	72		
h_1		mm	76					
x		mm	100					
Cooling			external	internal	external	internal		



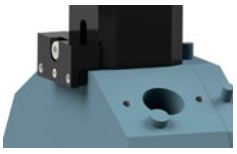
Pin rail

Type			30-25-L	30-25-LIKD (new)	30-VX3-L	30-VX3LIKD (new)	VDI	Tool clamping
31W 31 9939	Driven tool, radial, TOEM rail	ER25	(XXX)	(XXX)	–	–	30	ER25
31W 31 9941		VX3	–	–	(XXX)	(XXX)	30	Varia VX3
l_1		mm	126	126	134	134		
b_1		mm	67	67	69.5	69.5		
b_2		mm	41	59.5	41	59.5		
h_1		mm	64	64	68	68		
x		mm	100					
Cooling			external	internal	external	internal		

31 9931_30-25-LIKD



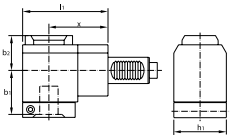
Type			40-32-L	40-32-LIKD (new)	40-VX4-L	40-VX 4LIKD (new)	VDI	Tool clamping
31W 31 9947	Driven tool, radial, TOEM rail	ER32	(XXX)	(XXX)	–	–	40	ER32
31W 31 9949		VX4	–	–	(XXX)	(XXX)	40	Varia VX4
l_1		mm	138					
b_1		mm	85	85	76.5	76.5		
b_2		mm	53	72	53	72		
h_1		mm	76					
x		mm	100					
Cooling			external	internal	external	internal		



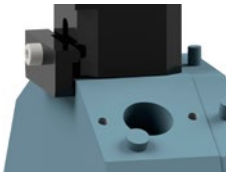
TOEM rail

Type			30-25-L	30-25-LIKD (new)	30-VX3-L	30-VX3LIKD (new)	VDI	Tool clamping
31W 31 9957	Driven tool, radial, OT rail	ER25	(XXX)	(XXX)	–	–	30	ER25
31W 31 9959		VX3	–	–	(XXX)	(XXX)	30	Varia VX3
l_1		mm	126	126	134	134		
b_1		mm	67	67	69.5	69.5		
b_2		mm	41	59.5	41	59.5		
h_1		mm	64	64	68	68		
x		mm	100					
Cooling			external	internal	external	internal		

31 9933 _30-VX3-L



Type			40-32-L	40-32-LIKD (new)	40-VX4-L	40-VX4LIKD (new)	VDI	Tool clamping
31W 31 9961	Driven tool, radial, OT rail	ER32	(XXX)	(XXX)	–	–	40	ER32
31W 31 9963		VX4	–	–	(XXX)	(XXX)	40	Varia VX4
l_1		mm	138					
b_1		mm	85	85	76.5	76.5		
b_2		mm	53	72	53	72		
h_1		mm	76					
x		mm	100					
Cooling			external	internal	external	internal		



OT rail

GARANT BMT toolholders

High-quality, alloyed case-hardening steels - case-hardened HRC 58 ± 2. Very high precision - contact surface and functional faces ground. Spring-mounted pressure pad for uniform clamping of the turning tools. Perfectly matched for the respective lathe. With secured ball injection nozzles up to 80 bar. Burnished for better corrosion protection.

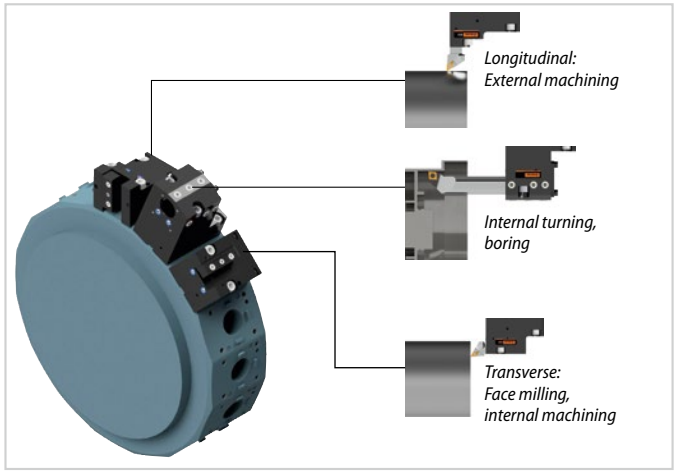
Highly efficient cooling directly at the cutting edge with GARANT eco

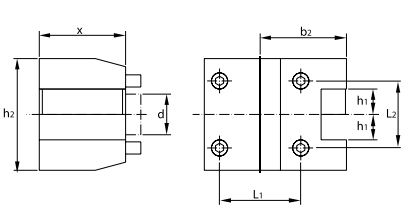
Longitudinal and transverse toolholders

Suitable for efficient cooling systems such as GARANT eco, but also for other systems.
Suitable for conventional toolholders.

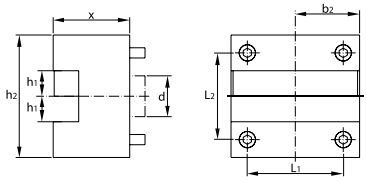
Application:

31 9884 – Mainly for external machining.
31 9886 – Primarily for facing and internal machining.





31 9884_60



31 9886_68

BMT			40	60	55/E	55/D	68
31V 31 9884	eco BMT longitudinal toolholder		XXX	XXX	XXX	XXX	XXX
31V 31 9886	eco BMT transverse toolholder		XXX	XXX	XXX	XXX	XXX
x (31 9884)		mm	70	70	70	60	75
x (31 9886)		mm	80	100	95	95	98
L_1 (31 9884)		mm	70	94	64	64	110
L_1 (31 9886)		mm	70	94	64	64	100
L_2		mm	62	84	64	64	68
b_2 (31 9884)		mm	65	65	70.5	70.5	64
b_2 (31 9886)		mm	65	70	45	52.5	64
h_1		mm	20	25	20	20	25
h_2 (31 9884)		mm	78	70	90	85	94
h_2 (31 9886)		mm	78	108	91	94	94
Suitable machines			Mori NZ, Mori NT, CTX310-BMT	Mori NL, Mori NT	Emag VL, Emag VT	Doosan Lynx, Doosan Puma, Hwacheon	Mazak: QT Smart, QT Compakt

31 9888_40

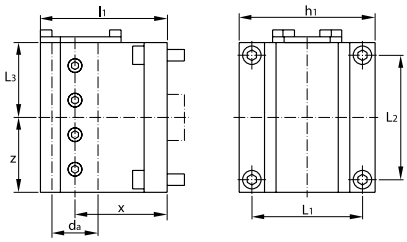
Boring bar / combination holder

For internal and external cooling.

Application: For internal machining with boring bar holder or indexable drills.

BMT			40	60	55/E	55/D	68
31V 31 9888	Boring bar holder		XXX	XXX	XXX	XXX	XXX
Z		mm	65	70	58	60	64
x		mm	100	80	85	60	95
l_1		mm	125	110	115	90	123
d_a		mm	32	40	32	40	32
L_1		mm	70	94	64	64	110
L_2		mm	62	84	64	64	68
L_3		mm	10	30	22	45	21
h_1		mm	78	108	85	85	76
Suitable machines			Mori NZ, Mori NT, CTX310-BMT	Mori NL, Mori NT	Emag VL, Emag VT	Doosan Lynx, Doosan Puma, Hwacheon	Mazak: QT Smart, QT Compakt

31 9888 _68



Toolholder with hollow taper shank (HSK) – Form T for turning / milling centres

ISO 12164-3

Application: For use on lathes and milling centres.

Toolholder for toolholders with square shanks

With adjustable cooling nozzle with internal thread.

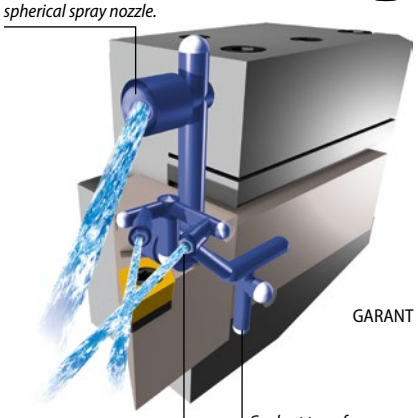
31 8620–8628 – **GARANT** - Optimisation of tool life, better surface finishes, increased process reliability and increased productivity due to GARANT eco.

Application: For mounting ISO toolholders with square shanks.

for toolholder square			mm	20	25
36D 31 8602		Toolholder **axial, single, right-hand**	HSK-T 40	XXX	–
36D 31 8606	SWISS TOOLS	Toolholder **axial, single, left-hand**	HSK-T 40	XXX	–
36D 31 8618		Toolholder **radial**	HSK-T 40	(XXX)	–
31G 31 8620	Garant	eco toolholder **axial single, right-hand**	HSK-T 63	–	XXX
31G 31 8621		eco toolholder **axial single, left-hand**	HSK-T 63	–	XXX
36D 31 8802	SWISS TOOLS	Toolholder **axial, single, right-hand**	HSK-T 63	XXX	XXX
36D 31 8806		Toolholder **axial, single, left-hand**	HSK-T 63	XXX	XXX
31G 31 8623	Garant	eco toolholder **axial double, right-hand**	HSK-T 63	–	XXX
36D 31 8811	SWISS TOOLS	Toolholder **axial, double, right-hand**	HSK-T 63	(XXX)	(XXX)
36D 31 8814		Toolholder **axial, triple, right-hand**	HSK-T 63	XXX	(XXX)
31G 31 8625	Garant	eco toolholder **radial**	HSK-T 63	–	XXX
36D 31 8818	SWISS TOOLS	Toolholder **radial**	HSK-T 63	XXX	XXX
31G 31 8627	Garant	eco toolholder **diagonal 45°, right-hand**	HSK-T 63	–	XXX
31G 31 8628		eco toolholder **diagonal 45°, left-hand**	HSK-T 63	–	XXX
36D 31 8822	SWISS TOOLS	Toolholder **diagonal 45°, right-hand**	HSK-T 63	(XXX)	(XXX)
36D 31 8826		Toolholder **diagonal 45°, left-hand**	HSK-T 63	XXX	XXX
Dimension A (31 8602, 31 8606, 31 8620, 31 8621, 31 8623)			mm	80	130
Dimension A (31 8618, 31 8625)			mm	75	90
Dimension A (31 8802, 31 8806, 31 8811, 31 8814)			mm	90	100
Dimension A (31 8818)			mm	90	
Dimension A (31 8627, 31 8628)			mm	–	112.7
Dimension A (31 8822, 31 8826)			mm	100	
L_1 (31 8602, 31 8606, 31 8620, 31 8621, 31 8623, 31 8625)			mm	45	88
L_1 (31 8802, 31 8806, 31 8811, 31 8814, 31 8822, 31 8826)			mm	45	58
L_1 (31 8627, 31 8628)			mm	–	80
B (31 8602, 31 8606, 31 8618, 31 8620, 31 8621, 31 8802, 31 8806, 31 8623, 31 8811, 31 8814, 31 8818, 31 8627, 31 8628, 31 8822, 31 8826)			mm	30	40
B (31 8625)			mm	–	55
∅ D (31 8602, 31 8606, 31 8618, 31 8620, 31 8621, 31 8802, 31 8806, 31 8623, 31 8811, 31 8625, 31 8818, 31 8822, 31 8826)			mm	80	102
∅ D (31 8814)			mm	90	102
∅ D (31 8627, 31 8628)			mm	–	94
f (31 8627, 31 8628)			mm	–	12.7
f (31 8822, 31 8826)			mm	15	

HSK-T

Additional cooling using a high-pressure spherical spray nozzle.



GARANT eco

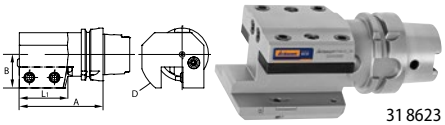
Targeted cooling.

Coolant transfer from the tool holder to the clamping toolholder.

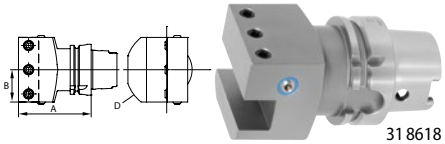
Adapted mating face for strong grip.

31 8620

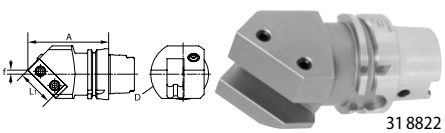
With pass-through shim. Suitable for toolholders with shank 20 and 25 mm.



31 8623



31 8618

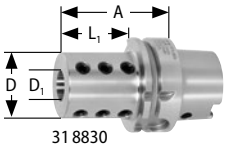


31 8822

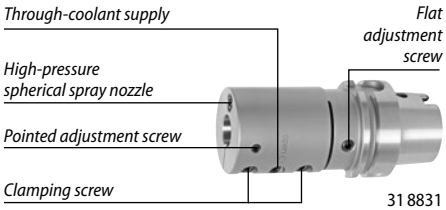
Boring bar holders

31 8831 – **GARANT** - more stability and vibration damping effect due to wrapping around the boring bar.

Application: For mounting boring bars.



31 8830



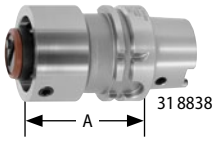
31 8831

Clamping range ∅ D_1			mm	6	8	10	12	16	20	25	32	40
36D 31 8829	SWISS TOOLS	Boring bar holder	HSK-T 40	(XXX)	(XXX)	XXX	XXX	XXX	–	–	–	–
36D 31 8830	SWISS TOOLS	Boring bar holder	HSK-T 63	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
31G 31 8831	Garant	Boring bar holder **slotted**	HSK-T 63	–	–	XXX	XXX	XXX	XXX	XXX	–	–
Dimension A (31 8829)			mm	55	55	55	55	70	–	–	–	–
Dimension A (31 8830)			mm	60	60	60	60	75	75	75	90	90
Dimension A (31 8831)			mm	–	–	105	105	105	105	105	–	–
∅ D (31 8829, 31 8830)			mm	34	34	34	36	40	44	50	56	63
∅ D (31 8831)			mm	–	–	45	45	45	55	55	–	–
L_1 (31 8829)			mm	35	35	35	35	50	–	–	–	–
L_1 (31 8830)			mm	34	34	34	34	49	49	49	64	64
L_1 (31 8831)			mm	–	–	79.05	79.05	79.05	79.05	79.05	–	–

Extensions

Application: For extension of HSK interfaces.

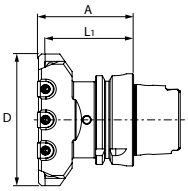
A dimension			mm	80	120
36D 31 8838	SWISS TOOLS	Extension HSK-T63 / HSK-T63	HSK-T 63	XXX	XXX
Dimension A			mm	80	120



31 8838

Parting-off toolholder

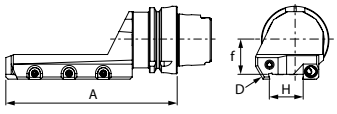
Application: To take parting-off blades with coolant delivery from all popular manufacturers.
Transfer holes not used can be closed off using the screws supplied.
Supplied with ball spray nozzle.



31 8843

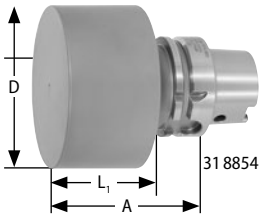
31 8844

for blade height H			mm	32
36D 31 8843		eco radial parting-off toolholder	HSK-T 63	(XXX)
36D 31 8844	Garant	eco axial parting-off toolholder, right-hand	HSK-T 63	XXX
36D 31 8845		eco axial parting-off toolholder, left-hand	HSK-T 63	XXX new
Dimension A (31 8843)			mm	65
Dimension A (31 8844, 31 8845)			mm	160
L_1 (31 8843)			mm	60
∅ D (31 8843)			mm	90
∅ D (31 8844, 31 8845)			mm	75
f (31 8844, 31 8845)			mm	32



Blanks

Application: For making special tools.



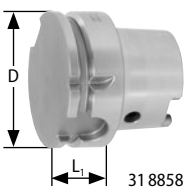
31 8854

∅ D×A dimension			mm	54×55	63×200	102×100
36D 31 8853	SWISS TOOLS	Blank	HSK-T 40	(XXX)	–	–
36D 31 8854	SWISS TOOLS	Blank	HSK-T 63	–	(XXX)	XXX
L_1			mm	35	174	74

Blanking plug

Application: For closing off unused HSK clamping units.

HSK-T				40	63
36D 31 8858	SWISS TOOLS	HSK-T - blanking plug		XXX	XXX
Adapter				HSK-T 40	HSK-T 63
∅ D			mm	40	63
L_1			mm	20	26



31 8858

Toolholder with polygonal shanks (PSC) – for turning / milling centres

Application: For use on lathes and milling centres.

Note: PSC clamping stud on request.

ISO 26623-1

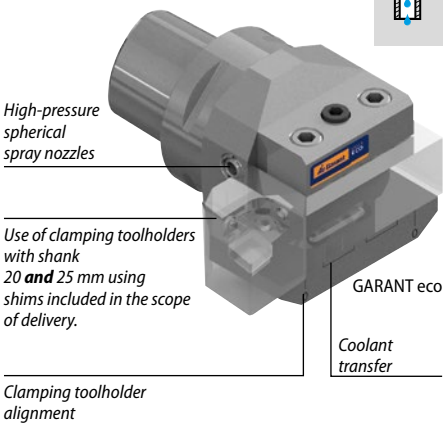
Toolholder for toolholders with square shanks

GARANT - Optimisation of tool life, better surface finishes, increased process reliability and increased productivity due to GARANT eco.

31 8851–8859 – **GARANT** - Optimisation of tool life, better surface finishes, increased process reliability and increased productivity due to GARANT eco.

Application: For mounting ISO toolholders with square shanks.

PSC



for toolholder square			mm	20	25	32
36D 31 8901	SWISS TOOLS	Toolholder **axial single, right-hand**	PSC 40	XXX	–	–
36D 31 8902	SWISS TOOLS	Toolholder **axial single, left-hand**	PSC 40	(XXX)	–	–
36D 31 8903	SWISS TOOLS	Toolholder **axial double, right-hand**	PSC 40	(XXX)	–	–
36D 31 8905	SWISS TOOLS	Toolholder **radial**	PSC 40	XXX	–	–
36D 31 8921	SWISS TOOLS	Toolholder **axial single, right-hand**	PSC 50	XXX	–	–
36D 31 8922	SWISS TOOLS	Toolholder **axial single, left-hand**	PSC 50	(XXX)	–	–
36D 31 8925	SWISS TOOLS	Toolholder **axial, triple, right-hand**	PSC 50	(XXX)	–	–
36D 31 8926	SWISS TOOLS	Toolholder **radial**	PSC 50	XXX	–	–
31G 31 8851	Garant	eco toolholder **axial single, right-hand**	PSC 63	–	XXX	–
31G 31 8852	Garant	eco toolholder **axial single, left-hand**	PSC 63	–	XXX	–
36D 31 8860	SWISS TOOLS	Toolholder **axial single, right-hand**	PSC 63	XXX	XXX	–
36D 31 8864	SWISS TOOLS	Toolholder **axial single, left-hand**	PSC 63	XXX	XXX	–
31G 31 8855	Garant	eco toolholder **axial double, right-hand**	PSC 63	–	XXX	–
36D 31 8868	SWISS TOOLS	Toolholder **axial double, right-hand**	PSC 63	(XXX)	(XXX)	–
36D 31 8872	SWISS TOOLS	Toolholder **axial triple, right-hand**	PSC 63	XXX	XXX	–
31G 31 8856	Garant	eco toolholder **radial**	PSC 63	–	XXX	–
36D 31 8876	SWISS TOOLS	Toolholder **radial**	PSC 63	(XXX)	XXX	–
31G 31 8857	Garant	eco toolholder **diagonal 45°, right-hand**	PSC 63	–	XXX	–
31G 31 8859	Garant	eco toolholder **diagonal 45°, left-hand**	PSC 63	–	XXX	–
36D 31 8880	SWISS TOOLS	Toolholder **diagonal 45°, right-hand**	PSC 63	(XXX)	XXX	–
36D 31 8884	SWISS TOOLS	Toolholder **diagonal 45°, left-hand**	PSC 63	(XXX)	(XXX)	–
36D 31 8941	SWISS TOOLS	Toolholders **axial single, right-hand**	PSC 80	–	–	XXX
36D 31 8942	SWISS TOOLS	Toolholders **axial single, left-hand**	PSC 80	–	–	XXX
36D 31 8946	SWISS TOOLS	Toolholders **radial**	PSC 80	–	–	XXX
Dimension A (31 8901, 31 8902, 31 8903)			mm	80	–	–
Dimension A (31 8905)			mm	55	–	–
Dimension A (31 8921, 31 8922)			mm	98	–	–
Dimension A (31 8925)			mm	123	–	–
Dimension A (31 8926)			mm	58	–	–
Dimension A (31 8851, 31 8852, 31 8860, 31 8864, 31 8855, 31 8868, 31 8941, 31 8942)			mm	100	130	140
Dimension A (31 8872)			mm	125	130	–
Dimension A (31 8856, 31 8876, 31 8946)			mm	60	71	85
Dimension A (31 8857, 31 8859, 31 8880, 31 8884)			mm	100	110	–
L_1 (31 8901, 31 8902, 31 8903)			mm	60	–	–
L_1 (31 8921, 31 8922, 31 8851, 31 8852, 31 8860, 31 8864, 31 8855, 31 8868, 31 8941, 31 8942)			mm	75	102	98
L_1 (31 8925)			mm	97	–	–
L_1 (31 8872)			mm	95	102	–
B			mm	30	40	55
∅ D (31 8901, 31 8902, 31 8903, 31 8905, 31 8921, 31 8922, 31 8926, 31 8851, 31 8852, 31 8860, 31 8864, 31 8855, 31 8868, 31 8856, 31 8876, 31 8880, 31 8884, 31 8941, 31 8942)			mm	80	102	110
∅ D (31 8925, 31 8857, 31 8859, 31 8946)			mm	90	94	132
∅ D (31 8872)			mm	90	102	–
f (31 8857, 31 8859)			mm	–	12.7	–
f (31 8880, 31 8884)			mm	15	15	–

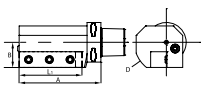
31 8901

31 8905

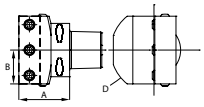
31 8851

31 8855

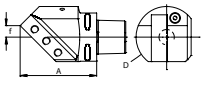
31 8857



31 8860



31 8876



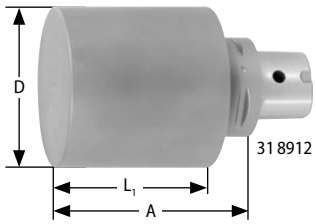
31 8880

31 8941

Blanks

Application: For making special tools.

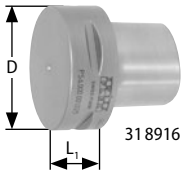
∅ D×A dimension			mm	63×100	102×130
36D 31 8912	SWISS TOOLS	PSC - blank	PSC 63	(XXX)	(XXX)
L_1			mm	78	108



Joint plug

Application: For closing off unused PSC clamping units.

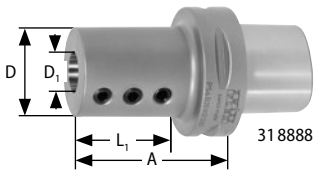
Type			40	50	60
36D 31 8916	SWISS TOOLS	PSC - blanking plug	XXX	XXX	XXX
Adapter			PSC 40	PSC 50	PSC 63

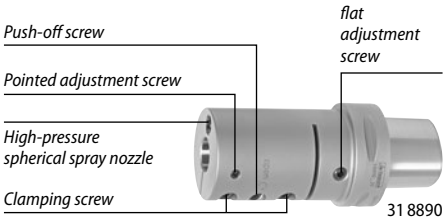


Boring bar holder

31 8890 – **GARANT** - more stability and vibration damping effect due to wrapping around the boring bar.

Application: For mounting boring bars.



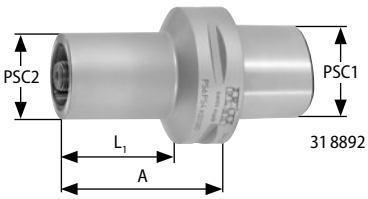


Clamping range ∅ D_1			mm	6	8	10	12	16	20	25	32	40	50
36D 31 8886			PSC 40	XXX	XXX	(XXX)	XXX	XXX	XXX	–	–	–	–
36D 31 8887	SWISS TOOLS	Boring bar holder	PSC 50	(XXX)	(XXX)	XXX	XXX	XXX	XXX	XXX	–	–	–
36D 31 8888			PSC 63	(XXX)	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	–
31G 31 8890	Garant	Boring bar holder **slotted**	PSC 63	–	–	XXX	XXX	XXX	XXX	XXX	–	–	–
36D 31 8889	SWISS TOOLS	Boring bar holder	PSC 80	–	–	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
Dimension A (31 8886)			mm	65	65	65	65	65	65	–	–	–	–
Dimension A (31 8887)			mm	70	70	70	70	70	70	70	–	–	–
Dimension A (31 8888)			mm	80	80	80	80	80	80	100	100	105	–
Dimension A (31 8890)			mm	–	–	105	105	105	105	105	–	–	–
Dimension A (31 8889)			mm	–	–	98	98	98	98	98	112	112	112
∅ D (31 8886, 31 8887, 31 8888, 31 8889)			mm	34	34	34	36	40	44	50	56	63	82
∅ D (31 8890)			mm	–	–	45	45	45	55	55	–	–	–
L_1 (31 8886)			mm	43	43	43	43	43	43	–	–	–	–
L_1 (31 8887)			mm	48	48	48	48	48	48	48	–	–	–
L_1 (31 8888)			mm	58	58	58	58	58	58	78	78	83	–
L_1 (31 8890)			mm	–	–	83	83	83	83	83	–	–	–
L_1 (31 8889)			mm	–	–	68	68	68	68	68	82	82	81.7

Reduction

Application: For reduction of PSC interfaces.

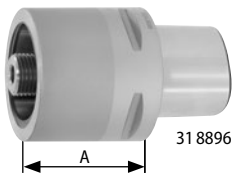
PSC1 / PSC2				63/40	63/50
36D 31 8892	SWISS TOOLS	PSC - reducer	PSC 63	XXX	(XXX)
Dimension A			mm	80	
L_1			mm	58	51.5



Extensions

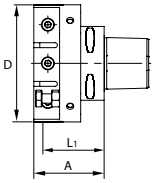
Application: For extending PSC interfaces.

Dimension A				mm	60	80	100
36D 31 8894		Extension PSC-40 / PSC-40	PSC 40	XXX	–	–
36D 31 8895	SWISS TOOLS	Extension PSC-50 / PSC-50	PSC 50	–	XXX	–
36D 31 8896		Extension PSC-63 / PSC-63	PSC 63	XXX	–	XXX
Dimension A				mm	60	80	100

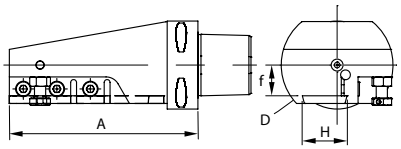


Parting-off toolholder

Application: To take parting-off blades with coolant delivery from all popular manufacturers.
Transfer holes not used can be closed off using the screws supplied.
Supplied with ball spray nozzle.



31 8906



31 8907

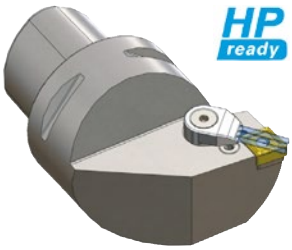
for blade height H			mm	32
36D 31 8906		eco radial parting-off toolholder	PSC 63	(XXX)
36D 31 8907	Garant	eco axial parting-off toolholder, right-hand	PSC 63	(XXX)
36D 31 8909		eco axial parting-off toolholder, left-hand	PSC 63	XXX
Dimension A (31 8906)			mm	50
Dimension A (31 8907, 31 8909)			mm	160
L_1 (31 8906)			mm	45.5
∅ D (31 8906)			mm	107
∅ D (31 8907, 31 8909)			mm	96
f (31 8907, 31 8909)			mm	32.5

SWISSTOOLS High-pressure cooling nozzle (HP) for screw-on toolholders

Optimum cooling using a High Pressure (HP) cooling nozzle.
Application: Attachment to a screw-on toolholder with a HP channel.
Supplied with: 1 attachment screw, O-ring, plug screw for the standard cooling channel.

1. Plug the standard cooling channel with a screw plug.

2. Attach the HP nozzle to the appropriate hole.



3. The HP function is immediately ready for use.

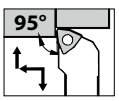
32 0001

Type			63
36D 32 0001		High-pressure cooling nozzle (HP)	XXX

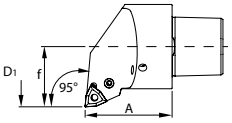
SWISSTOOLS Toolholder for indexable inserts

Note: Order the suitable **HP nozzle** No. 320001 separately.
Spare parts No. 320610 – 320626 can be found in the spare parts list.
PSC clamping stud on request.

PWLN R/L 95° lever-lock toolholder for WN..0804..

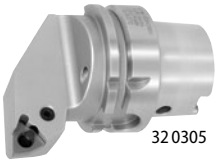


HP ready



HSK-T PSC

ISO 12164-3

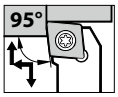

32 0305

ISO 26623-1

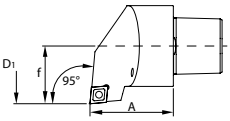
32 0005

Shank ∅ / insert size	36D 32 0005	36D 32 0006	36D 32 0305	36D 32 0306	Dimension A		∅ D_1 min	f	suitable indexable insert	Spare part
	Lever-lock toolholder									
	right-hand	left-hand	right-hand	left-hand	32 0005 32 0006	32 0305 32 0306				
mm	HSK-T	HSK-T	PSC	PSC	mm	mm	mm	mm		
40/08HP	(XXX)	XXX	(XXX)	XXX	55	50	50	27	WN..0804..	P04
50/08HP	–	–	XXX	XXX	–	60	63	35	WN..0804..	P04
63/08HP	XXX	XXX	XXX	(XXX)	70	65	80	45	WN..0804..	P04

SCLC R/L 95° screw-on toolholder for CC..1204..



HP ready



ISO 12164-3

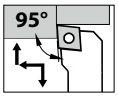
32 0010

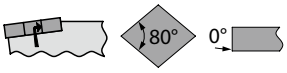
ISO 26623-1

32 0010

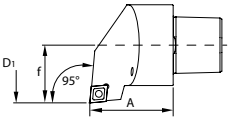
Shank Ø / insert size	32 0010	32 0011	32 0310	32 0311	Dimension A		Ø D_1 min	f	suitable indexable insert	Spare part
	Screw-on toolholder									
	right-hand	left-hand	right-hand	left-hand	32 0010 32 0011	32 0310 32 0311				
mm	HSK-T	HSK-T	PSC	PSC	mm	mm	mm	mm		
40/12HP	XXX	XXX	XXX	XXX	55	50	50	27	CC..1204..	S01
50/12HP	–	–	XXX	(XXX)	–	60	63	35	CC..1204..	S01
63/12HP	(XXX)	XXX	(XXX)	(XXX)	70	65	80	45	CC..1204..	S01

PCLN R / L 95° lever-lock toolholder for CN..





HP ready



ISO 12164-3

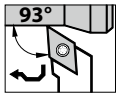
32 0315

ISO 26623-1

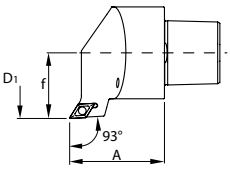
32 0015

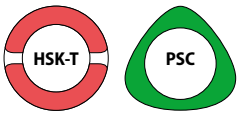
Shank Ø / insert size	32 0015	32 0016	32 0315	32 0316	Dimension A		Ø D_1 min	f	suitable indexable insert	Spare part
	Lever-lock toolholder									
	right-hand	left-hand	right-hand	left-hand	32 0015 32 0016	32 0315 32 0316				
mm	HSK-T	HSK-T	PSC	PSC	mm	mm	mm	mm		
40/12HP	XXX	XXX	(XXX)	XXX	55	50	50	27	CN..1204..	P01
50/12HP	–	–	XXX	XXX	–	60	63	35	CN..1204..	P01
63/12HP	(XXX)	XXX	XXX	XXX	70	65	80	45	CN..1204..	P01
63/16HP	(XXX)	(XXX)	(XXX)	(XXX)	70	65	80	45	CN..1606..	P02

SDJC R / L 93° screw-on toolholder for DC..11T3..



HP ready





ISO 12164-3

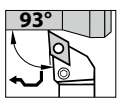
32 0030

ISO 26623-1

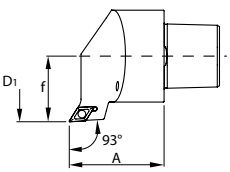
32 0030

Shank Ø / insert size	32 0030	32 0031	32 0330	32 0331	Dimension A		Ø D_1 min	f	suitable indexable insert	Spare part
	Screw-on toolholder									
	right-hand	left-hand	right-hand	left-hand	32 0030 32 0031	32 0330 32 0331				
mm	HSK-T	HSK-T	PSC	PSC	mm	mm	mm	mm		
40/11HP	(XXX)	XXX	(XXX)	XXX	55	50	50	27	DC..11T3..	S05
50/11HP	–	–	XXX	XXX	–	60	63	35	DC..11T3..	S05
63/11HP	(XXX)	XXX	XXX	XXX	70	65	80	45	DC..11T3..	S05

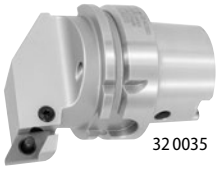
PDJN R / L 93° lever-lock toolholder for DN..1506..



HP ready



ISO 12164-3



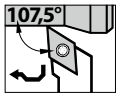
32 0035

ISO 26623-1

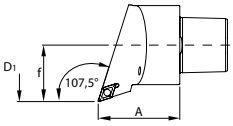
32 0335

Shank Ø / insert size	32 0035	32 0036	32 0335	32 0336	Dimension A		Ø D_1 min	f	suitable indexable insert	Spare part
	Lever-lock toolholder									
	right-hand	left-hand	right-hand	left-hand	32 0035 32 0036	32 0335 32 0336				
mm	HSK-T	HSK-T	PSC	PSC	mm	mm	mm	mm		
40/15HP	XXX	XXX	XXX	XXX	55	50	50	27	DN..1506..	P05
50/15HP	–	–	XXX	XXX	–	60	63	35	DN..1506..	P05
63/15HP	XXX	XXX	XXX	(XXX)	70	65	80	45	DN..1506..	P05

SDHC R / L 107.5° screw-on toolholder for DC..11T3..



HP ready



Shank ∅ / insert size	36D 32 0040	36D 32 0041	36D 32 0340	36D 32 0341	Dimension A		∅ D_1 min	f	suitable indexable insert	Spare part
	Screw-on toolholder									
	right-hand	left-hand	right-hand	left-hand	32 0040 32 0041	32 0340 32 0341				
mm	HSK-T	HSK-T	PSC	PSC	mm	mm	mm	mm		
40/11HP	XXX	XXX	(XXX)	XXX	55	50	50	27	DC..11T3..	S05
50/11HP	–	–	(XXX)	XXX	–	60	63	35	DC..11T3..	S05
63/11HP	XXX	(XXX)	XXX	XXX	70	65	80	45	DC..11T3..	S05

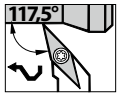
ISO 12164-3

32 0040

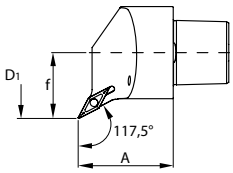
ISO 26623-1

32 0040

SVPB R / L 117.5° screw-on toolholder for VB..1604..



HP ready



Shank ∅ / insert size	36D 32 0050	36D 32 0051	36D 32 0350	36D 32 0351	Dimension A		∅ D_1 min	f	suitable indexable insert	Spare part
	Screw-on toolholder									
	right-hand	left-hand	right-hand	left-hand	32 0050 32 0051	32 0350 32 0351				
mm	HSK-T	HSK-T	PSC	PSC	mm	mm	mm	mm		
40/16HP	XXX	XXX	XXX	(XXX)	55	50	50	27	VB..1604..	S07
50/16HP	–	–	(XXX)	(XXX)	–	60	63	35	VB..1604..	S07
63/16HP	XXX	XXX	(XXX)	XXX	70	65	80	45	VB..1604..	S07

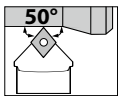
ISO 12164-3

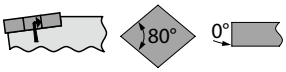
32 0350

ISO 26623-1

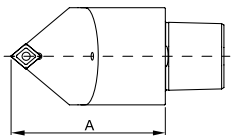
32 0050

PCMN N 50° lever-lock toolholder for CN..





HP ready



Shank ∅ / insert size – A dimension	36D 32 0065	36D 32 0365	Dimension A	suitable indexable insert	Spare part
	Lever-lock toolholder neutral				
mm	HSK-T	PSC	mm		
4012-80HP	(XXX)	–	80	CN..1204..	P01
6312-100HP	XXX	XXX	100	CN..1204..	P01
6312-130HP	XXX	XXX	130	CN..1204..	P01
6316-100HP	XXX	(XXX)	100	CN..1606..	P02
6316-130HP	(XXX)	(XXX)	130	CN..1606..	P02

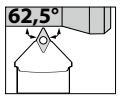
ISO 12164-3

32 0065

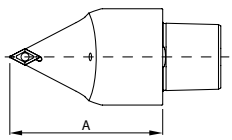
ISO 26623-1

32 0365

SDNC N 62.5° screw-on toolholder for DC..11T3



HP ready



Shank ∅ / insert size – A dimension	36D 32 0070	36D 32 0370	Dimension A	suitable indexable insert	Spare part
	Screw-on toolholder neutral				
mm	HSK-T	PSC	mm		
4011-80HP	XXX	–	80	DC..11T3..	S05
6311-130HP	(XXX)	XXX	130	DC..11T3..	S05
6311-100HP	XXX	XXX	100	DC..11T3..	S05

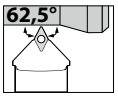
ISO 12164-3

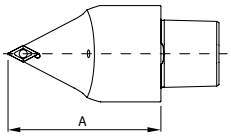
32 0070

ISO 26623-1

32 0370

PDNN N 62.5° lever-lock toolholder for DN..1506..





Shank ∅ / insert size – A dimension	36D 32 0075	36D 32 0375	Dimension A	suitable indexable insert	Spare part
	Lever-lock toolholder neutral				
mm	HSK-T	PSC	mm		
4015-80HP	(XXX)	–	80	DN..1506..	P06
6315-100HP	XXX	(XXX)	100	DN..1506..	P06
6315-130HP	XXX	XXX	130	DN..1506..	P06

ISO 12164-3

32 0075

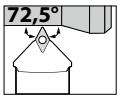
ISO 26623-1

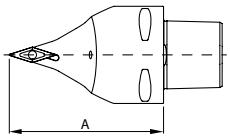
32 0375

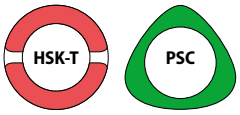
Toolholder / boring bars for indexable inserts

Note: Appropriate spare parts No. 320610 – 320626 can be found in the spare parts list.

SVVB N 72.5° screw-on toolholder for VB..1604..







Shank ∅ / insert size – A dimension	36D 32 0080	36D 32 0380	Dimension A	suitable indexable insert	Spare part
	Screw-on toolholder neutral				
mm	HSK-T	PSC	mm		
4016-80HP	(XXX)	–	80	VB..1604..	S07
6316-100HP	(XXX)	(XXX)	100	VB..1604..	S07
6316-130HP	XXX	(XXX)	130	VB..1604..	S07

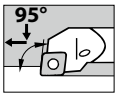
ISO 12164-3

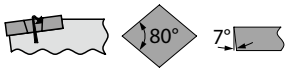
32 0380

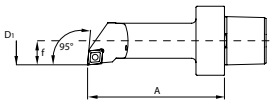
ISO 26623-1

32 0080

SCLC R / L 95° boring bar for CC..1204..

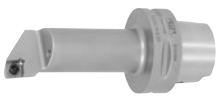






Shank ∅ / insert size – A dimension	36D 32 0085	36D 32 0086	36D 32 0385	36D 32 0386	Dimension A	∅ D_1 min	f	suitable indexable insert	Spare part
	Screw-on boring bar								
	right-hand	left-hand	right-hand	left-hand					
mm	HSK-T	HSK-T	PSC	PSC	mm	mm	mm		
40/12-90	–	–	XXX	(XXX)	90	32	17	CC..1204..	S01
40/12-110	XXX	(XXX)	(XXX)	(XXX)	110	40	22	CC..1204..	S01
40/12-140	(XXX)	(XXX)	–	–	140	32	17	CC..1204..	S01
50/12-90	–	–	(XXX)	(XXX)	90	32	17	CC..1204..	S01
50/12-110	–	–	(XXX)	(XXX)	110	40	22	CC..1204..	S01
63/12-125	(XXX)	XXX	XXX	XXX	125	40	22	CC..1204..	S01
63/12-140	(XXX)	(XXX)	(XXX)	(XXX)	140	50	27	CC..1204..	S01
63/12-160	(XXX)	(XXX)	(XXX)	(XXX)	160	40	22	CC..1204..	S01
63/12-180	(XXX)	(XXX)	XXX	(XXX)	180	50	27	CC..1204..	S01

ISO 12164-3

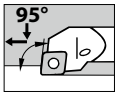


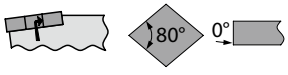
32 0385

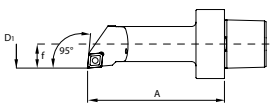
ISO 26623-1

32 0085

PCLN R / L 95° boring bar for CN..1204..







Shank ∅ / insert size – A dimension	36D 32 0090	36D 32 0091	36D 32 0390	36D 32 0391	Dimension A	∅ D_1 min	f	suitable indexable insert	Spare part
	Lever-lock boring bar								
	right-hand	left-hand	right-hand	left-hand					
mm	HSK-T	HSK-T	PSC	PSC	mm	mm	mm		
40/12-110	–	–	(XXX)	XXX	110	40	22	CN..1204..	P01
50/12-110	–	–	(XXX)	(XXX)	110	40	22	CN..1204..	P01
63/12-140	(XXX)	(XXX)	(XXX)	(XXX)	140	50	27	CN..1204..	P01
63/12-180	(XXX)	XXX	XXX	XXX	180	50	27	CN..1204..	P01

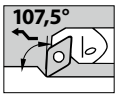
ISO 12164-3

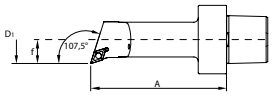
32 0390

ISO 26623-1

32 0090

SDQC R / L 107.5° boring bar for DC..11T3..





Shank ∅ / insert size – A dimension	36D 32 0095	36D 32 0096	36D 32 0395	36D 32 0396	Dimension A	∅ D_1 min	f	suitable indexable insert	Spare part
	Screw-on boring bar								
	right-hand	left-hand	right-hand	left-hand					
mm	HSK-T	HSK-T	PSC	PSC	mm	mm	mm		
40/11-90	–	–	(XXX)	(XXX)	90	32	17	DC..11T3..	S05
40/11-110	(XXX)	(XXX)	(XXX)	(XXX)	110	40	22	DC..11T3..	S05
40/11-140	(XXX)	(XXX)	–	–	140	32	17	DC..11T3..	S05
50/11-90	–	–	XXX	XXX	90	32	17	DC..11T3..	S05
50/11-110	–	–	(XXX)	(XXX)	110	40	22	DC..11T3..	S05
63/11-125	XXX	(XXX)	XXX	XXX	125	40	22	DC..11T3..	S05
63/11-140	(XXX)	(XXX)	(XXX)	(XXX)	140	50	27	DC..11T3..	S05
63/11-160	(XXX)	XXX	XXX	(XXX)	160	40	22	DC..11T3..	S05
63/11-180	(XXX)	XXX	(XXX)	XXX	180	50	27	DC..11T3..	S05

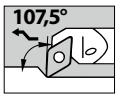
ISO 12164-3

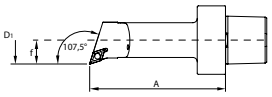
32 0095

ISO 26623-1

32 0395

PDQN R / L 107.5° boring bar for DN..1506..





Shank ∅ / insert size – A dimension	36D 32 0100	36D 32 0101	36D 32 0405	36D 32 0406	Dimension A	∅ D_1 min	f	suitable indexable insert	Spare part
	Lever-lock boring bar								
	right-hand	left-hand	right-hand	left-hand					
mm	HSK-T	HSK-T	PSC	PSC	mm	mm	mm		
40/15-110	–	–	(XXX)	(XXX)	110	40	22	DN..1506..	P05
50/15-110	–	–	(XXX)	XXX	110	40	22	DN..1506..	P05
63/15-140	(XXX)	(XXX)	(XXX)	XXX	140	50	27	DN..1506..	P05
63/15-180	(XXX)	(XXX)	(XXX)	(XXX)	180	50	27	DN..1506..	P05

ISO 12164-3

32 0100

ISO 26623-1

32 0405

ISO 26623-1 | ISO 12164-3 | HSK-T | PSC

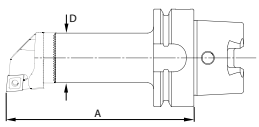
SWISSTOOLS

ST boring bar shanks for exchangeable heads

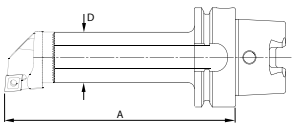
- For efficient turning.
- For left-hand and right-hand turning.

Application: For mounting exchangeable cutting heads.

Note: For suitable interchangeable heads see No. 264826 – 264827.



32 0102



32 0103

Boring bar shanks for HP ready

Shank ∅ / ∅ D - A dimension	36D 32 0102	36D 32 0407
	Boring bar shank	
mm	HSK-T	PSC
40/25-90	(XXX)	(XXX)
40/25-110	(XXX)	–
40/32-110	–	(XXX)
40/32-115	(XXX)	–
40/40-120	(XXX)	(XXX)
50/25-90	–	(XXX)
50/32-110	–	(XXX)
50/40-140	–	XXX
63/25-100	–	(XXX)
63/25-105	XXX	–
63/32-125	XXX	(XXX)
63/32-160	XXX	(XXX)
63/40-140	XXX	XXX
63/40-180	XXX	(XXX)

∅ D – A dimension	36D 32 0410
	Plain boring bar shank
mm	
25-200	XXX
32-218	XXX
40-283	XXX

32 0410

Shank ∅ / ∅ D – A dimension	36D 32 0103	36D 32 0408
	Boring bar shank vibration-damped	
mm	HSK-T	PSC
63/25-150	XXX	XXX
63/32-185	XXX	XXX
63/40-225	XXX	(XXX)

Garant Rotating lathe centres for inserts

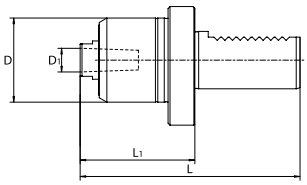
- Sprung version for axial length compensation whilst machining.
- Fully hardened and ground. Maintenance-free due to lifetime lubrication.
- Special seal prevents ingress of dirt and coolant.

Application: Flexible application thanks to exchangeable inserts.
For general use on turrets and counter-spindles on CNC machines.

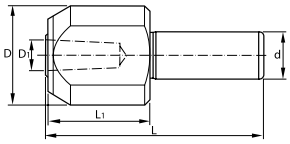
Supplied with:

32 0615 – Including chuck removal tool for releasing the inserts.

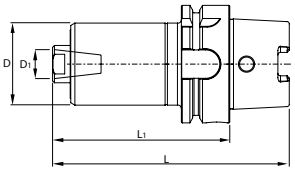
Optional extras: For exchangeable inserts see No. 320625.



32 0617_VDI30



32 0615_20



32 0617_HSK63

∅ d	mm	20	25	VDI30	VDI40	HSK40	HSK50	HSK63
31Z 32 0615	Rotating lathe centre for insert	XXX	–	–	–	–	–	–
31Z 32 0617		XXX	XXX	XXX	XXX	XXX	XXX	XXX
Body ∅ D (32 0615)	mm	40	–	–	–	–	–	–
Body ∅ D (32 0617)	mm				44			
∅ D_1	mm				12			
for workpiece weight (32 0615)	kg	200	–	–	–	–	–	–
for workpiece weight (32 0617)	kg	300	300	300	300	–	–	–
L (32 0615)	mm	90	–	–	–	–	–	–
L (32 0617)	mm	118	118	115	123	115	120	127
L_1 (32 0615)	mm	41	–	–	–	–	–	–
L_1 (32 0617)	mm	51	51	60	60	95	95	95
Sprung travel (32 0615)	mm	2.4	–	–	–	–	–	–
Sprung travel (32 0617)	mm				3			
maximum speed (32 0615)	rpm	4000	–	–	–	–	–	–
maximum speed (32 0617)	rpm				3000			
Radial run-out	mm				0.01			
suitable for colour code		■	■	■	■	■	■	■

Garant Exchangeable inserts for the revolving lathe centres

- High flexibility due to range of geometries on the same carrier tool.
- Fully hardened and ground.
- Quick and efficient exchange of worn tools.

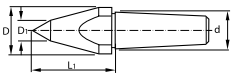
Suitable for:

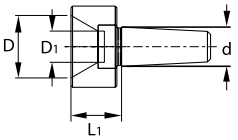
32 0625 – Lathe centre No. 320615, No. 320617, No. 320659 size 2, No. 321265 size 3, No. 321335 size 2.

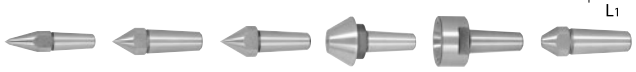
32 0627 – Lathe centre No. 320659 size 3, No. 321265 size 4, No. 321335 size 3.

32 0629 – Lathe centre No. 320659 size 4, No. 321265 size 5, No. 321335 size 4.

32 0631 – Lathe centre No. 320659 size 5, No. 321335 size 5.



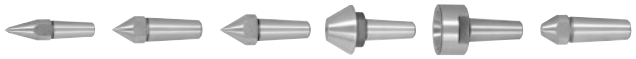




Type		1	2	3	4	5	6	suitable for colour code
31Z 32 0625	Insert for the revolving lathe centre	XXX	XXX	XXX	XXX	XXX	XXX	■
∅ D	mm	14	14	17	28	20	14	
∅ D_1	mm	4	–	–	13	10	4	
∅ d	mm				12			
L_1	mm	32	20	23	23	17	15	
Point angle	degrees	30; 60	60	60	60	60	60	
Width across flats	mm	12	12	14	17	22	12	

Type		1	2	3	4	5	6	suitable for colour code
31Z 32 0627	Insert for the revolving lathe centre	XXX	XXX	XXX	XXX	XXX	XXX	■
∅ D	mm	18	16	25	44	35	16	
∅ D_1	mm	8	–	–	24	20	4	
∅ d	mm				14			
L_1	mm	35	21	31	28	23	17	
Point angle	degrees	30; 60	60	60	60	60	60	
Width across flats	mm	14	14	22	19	36	14	

Colour code: ■ K12 ■ K14



Type		1	2	3	4	5	6	suitable for colour code
31Z 32 0629	Insert for the revolving lathe centre	XXX	XXX	XXX	XXX	XXX	XXX	
Ø D	mm	22	22	32	55	42	22	
Ø D_1	mm	8	–	–	30	25	5	
Ø d	mm	18						
L_1	mm	43	27	40	34	28	21	
Point angle	degrees	30; 60	60	60	60	60	60	
Width across flats	mm	19	19	27	22	41	19	

Type		1	2	3	4	5	6	suitable for colour code
31Z 32 0631	Insert for the revolving lathe centre	XXX	XXX	XXX	XXX	XXX	XXX	
Ø D	mm	28	28	38	68	60	28	
Ø D_1	mm	10	–	–	36	37	6	
Ø d	mm	24						
L_1	mm	52	34	45	41	35	27	
Point angle	degrees	30; 60	60	60	60	60	60	
Width across flats	mm	24	24	32	27	46	24	

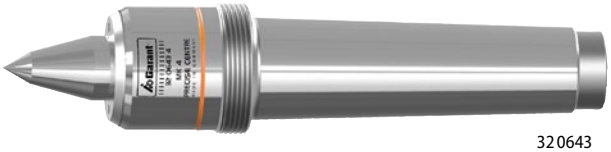
Garant Extremely slim rotating lathe centres - SlimLine

- **Precision version with additional stiffness in the bearings.**
- Precision roller bearings for high concentricity.
- Maintenance-free due to lifetime lubrication.
- Special seal prevents ingress of dirt and coolant.
- MT shank hardened and ground.
- **With extended centre,** point angle 60° / 30°.
- With push-off thread and push-off nut.
- outstandingly suitable for cutting threads and splining.

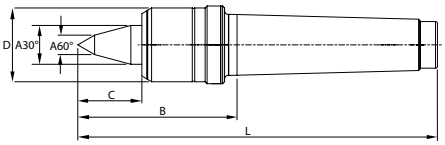
Advantage: **Push-off nut can be removed forwards** thus eliminating any obstruction to the machining process.

Application: Machining small and very small parts such as thread machining with optimum access to the flat face.

Supplied with: Including draw-off nut.



32 0643



32 0643

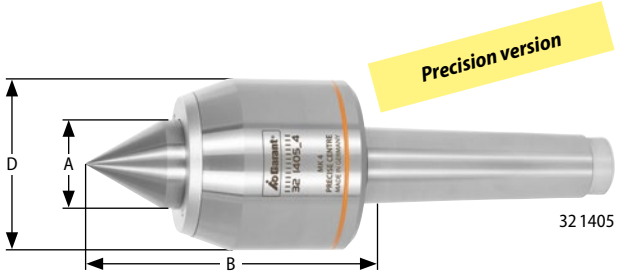
Morse taper		2	3	4	5
31Z 32 0643	Revolving lathe centre **60°/30°**	XXX	XXX	XXX	XXX
Body Ø D	mm	26	30	38	50
Overall length L	mm	123	149	185	223
Reach B	mm	59	68	82	93
largest centre point Ø 60° A	mm	12	14	20	25
largest centre point Ø 30° A	mm	6	7	10	12
maximum radial run-out	mm	0.005			
Centre point length C	mm	21	24	33	41.5
maximum speed	rpm	6000	5000	4000	3000
for workpiece weight	kg	850	1000	1400	1600

Draw-off nut included

Garant Revolving lathe centres – shock-absorbing

- Point angle 60°.
- **Sprung live centre to compensate pressure and length, shock-absorbing.**
- Live centre of through hardened tool steel precision ground to match the bearing.
- Precision roller bearing, lubricated for life.
- Shaft seal prevents ingress of dirt and coolant.
- Extremely rigid version with additional shaft bearing.
- Entire tool is hardened and ground.

Application:
- For **damping impacts.**
- For **compensating thermal expansion.**
- Suitable for use with face drivers.



32 1405

Morse taper		3	4	5
31Z 32 1405	Revolving lathe centre **shock absorbing**	XXX	XXX	XXX
Body Ø D	mm	60	68	92
Reach B	mm	95	111	146
largest centre point Ø A	mm	25	32	40
maximum radial run-out	mm	0.005		
maximum speed	rpm	5000	4000	3500
for workpiece weight	kg	300	600	1000

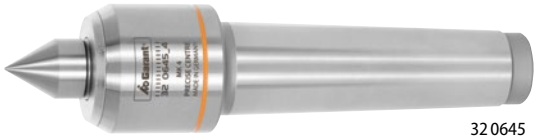
Colour code: K18 K24

Garant Lightweight revolving lathe centre

- **Lightweight version with slim body.**
- Precision roller bearings for high concentricity.
- Maintenance-free due to lifetime lubrication.
- Special seal prevents ingress of dirt and coolant.
- MT shank hardened and ground.

Application: Mainly used for machining small and smallest parts on all types of lathes.

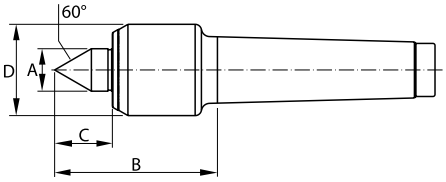
32 0647 – Extended point allows unobstructed access for the turning tool on the end face of the component. Particularly suitable for copy turning.



32 0645

32 0647

Morse taper		2	3	4	5
31Z 32 0645	Revolving lathe centre **60°**	XXX	XXX	XXX	XXX
31Z 32 0647	Revolving lathe centre **60° / 30°**	XXX	XXX	XXX	XXX
Body ∅ D	mm	32	34	43	58
Reach B (32 0645)	mm	64	64	77	105
Reach B (32 0647)	mm	74	74	86	116
largest centre point ∅ 60° A	mm	15	15	20	30
largest centre point ∅ 30° A (32 0647)	mm	8	8	10	12
maximum radial run-out	mm	0.005			
Centre point length C (32 0645)	mm	19.5	19.5	27	37
Centre point length C (32 0647)	mm	29	29	36	48
maximum speed	rpm	6000	6000	6000	4000
for workpiece weight (32 0645)	kg	200	400	800	1600
for workpiece weight (32 0647)	kg	150	300	700	1400



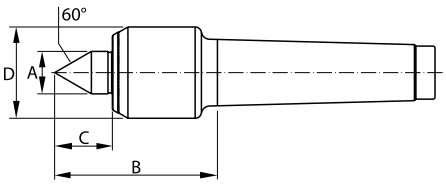
HOLEX Lightweight revolving lathe centre

- Tip angle 60°.
- **Lightweight version with slim body.**
- Precision roller bearings for high concentricity.
- Maintenance-free due to lifetime lubrication.
- Special seal prevents ingress of dirt and coolant.

Application: Mainly used for machining small and smallest components on all types of lathes.

32 0652

Morse taper		2	3	4	5	6
32L 32 0652	Lightweight revolving lathe centre	XXX	XXX	XXX	XXX	XXX
Body ∅ D	mm	49	49	54	67	88
Reach B	mm	73	75	77.5	95	118.5
largest centre point ∅ 60° A	mm	25	25	25	32	40
maximum radial run-out	mm	0.006				
Centre point length C	mm	29.5	29.5	29.5	40	50.5
for workpiece weight	kg	500	500	500	800	2000



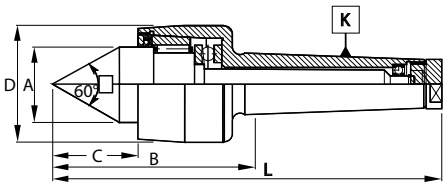
BISON Lightweight revolving lathe centre

- Point angle 60°.
- Lightweight version, maintenance-free.
- The special design allows adjustment of the radial play.

Application: For machining small components.

32 0655

Morse taper		2	3	4	5
36C 32 0655	Lightweight revolving lathe centre	XXX	XXX	XXX	XXX
Body ∅ D	mm	44	48	60	75
Overall length L	mm	137.5	166	196.5	246
Reach B	mm	73	85	94.5	116.5
largest centre point ∅ 60° A	mm	24	28	38	50
maximum radial run-out	mm	0.006			
Centre point length C	mm	26.5	32.5	43.5	55.5
maximum speed	rpm	8000	6000	4500	4000
for workpiece weight	kg	100	200	400	650



Lightweight revolving lathe centres

- Tip angle 60°.
- **Lightweight version with slim body.**
- Precision roller bearings for high concentricity.
- Maintenance-free due to lifetime lubrication.
- Special seal prevents ingress of dirt and coolant.

Application: Mainly used for machining small and smallest parts on all types of lathes.

32 0650

Morse taper			2	3	4	5
35R 32 0650	Lightweight revolving lathe centre		XXX	XXX	XXX	XXX
Body ∅ D		mm	32	34	42	58
Reach B		mm	62	62	75.5	104
largest centre point ∅ 60° A		mm	15	15	20	30
maximum radial run-out		mm	0.005	0.005	0.005	0.01
for workpiece weight		kg	200	400	800	1600

Revolving lathe centres

- Punch axis of through-hardened steel mounted on shank bearings.
- Live centre through hardened, multiple regrinding possible.
- Precision roller bearings for high concentricity.
- Maintenance-free due to lifetime lubrication.
- Special seal prevents ingress of dirt and coolant.
- Complete tool hardened and ground.

Application: For all types of lathe, equally suitable for roughing and finish turning.

32 0659 – Flexible application thanks to exchangeable inserts. For general use on turrets and counter-spindles on CNC machines.

Optional extras:

32 0659 – Exchangeable inserts No. 320625 - 320631

Note:

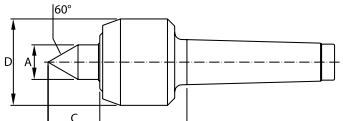
32 0659 – Changing the inserts in the key surfaces by counter-rotation.

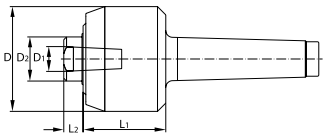
32 0657
With 60° point.

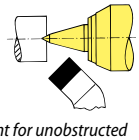
32 0658
With extended point 60°/30°.

32 0659

Morse taper			2	3	4	5	6
31Z 32 0657	Revolving lathe centre **60°**		XXX	XXX	XXX	XXX	XXX
31Z 32 0658	Revolving lathe centre **60° / 30°**		XXX	XXX	XXX	XXX	XXX
31Z 32 0659	Revolving lathe centre **for interchangeable heads.**		XXX	XXX	XXX	XXX	–
Body ∅ D (32 0657, 32 0658)		mm	45	60	60	78	110
Body ∅ D (32 0659)		mm	45	60	76	96	–
Reach B (32 0657)		mm	76	95	97	118	155
Reach B (32 0658)		mm	87	106	107	132	178
largest centre point ∅ 60° A (32 0657, 32 0658)		mm	20	24	24	32	52
largest centre point ∅ 30° A (32 0658)		mm	8	10	10	12	20
maximum radial run-out		mm			0.005		
Centre point length C (32 0657)		mm	26	36	36	47	62
Centre point length C (32 0658)		mm	37	47	47	61	86
maximum speed (32 0657, 32 0658)		rpm	5000	4300	4300	3200	2000
maximum speed (32 0659)		rpm	5000	4300	3200	2600	–
for workpiece weight (32 0657)		kg	200	400	800	2000	4500
for workpiece weight (32 0658)		kg	140	400	500	1200	2500
for workpiece weight (32 0659)		kg	100	300	350	1100	–
L_1 (32 0659)		mm	43	50	58	72	–
L_2 (32 0659)		mm	10	12	13	14	–
∅ D_1 (32 0659)		mm	12	14	18	24	–
∅ D_2 (32 0659)		mm	20	24	32	42	–
suitable for colour code (32 0659)							–







Extended point for unobstructed access to the turning tool.

Colour code: K12 K14 K18 K24

HOLEX Revolving lathe centres

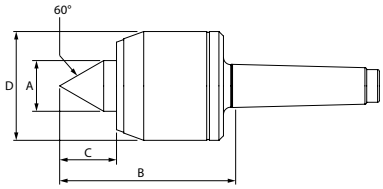
- Body and live centre hardened.
- Live centre through hardened, multiple regrinding possible.
- Precision roller bearings for high concentricity.
- Maintenance-free due to lifetime lubrication.
- Special seal prevents ingress of dirt and coolant.

32 0672 – ■ Point angle 60°.
32 0673 – ■ **With extended centre**, point angle 60° / 30°.

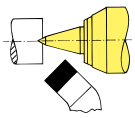
Application: For all types of lathe, equally suitable for roughing and finish turning.

32 0673 – The extended point allows the turning tool unobstructed access to the end face of the component. Particularly suitable for copy turning.

32 0672



32 0673


Extended point *for unobstructed access to the turning tool.*

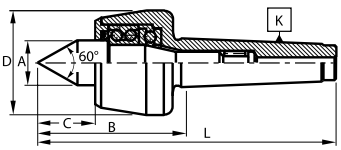
Morse taper		2	3	4	5	6
32L 32 0672	Revolving lathe centre **60°**	XXX	XXX	XXX	XXX	XXX
32L 32 0673	Revolving lathe centre **60° / 30°**	XXX	XXX	XXX	XXX	XXX
Body ∅ D	mm	50	50	69	88	105
Reach B (32 0672)	mm	73	73	95	120.5	139
Reach B (32 0673)	mm	83.5	88.5	108	135	159
largest centre point ∅ 60° A	mm	25	25	32	40	50
largest centre point ∅ 30° A (32 0673)	mm	10	12	14	16	18
maximum radial run-out	mm	0.006	0.006	0.006	0.006	0.01
Centre point length C (32 0672)	mm	29.5	29.5	40	50.5	57.5
Centre point length C (32 0673)	mm	40	45	53	65	77.5
for workpiece weight (32 0672)	kg	500	500	800	2000	3500
for workpiece weight (32 0673)	kg	500	500	500	1500	2500

BISON Revolving lathe centres

- Point angle 60°.
- Lightweight version, maintenance-free.

Application: For roughing and precision turning on lathes.

Morse taper		3	4	5
36C 32 0675	Lightweight revolving lathe centre	XXX	XXX	XXX
Body ∅ D	mm	50	70	90
Overall length L	mm	151	204	257.5
Reach B	mm	70	101.5	128
largest centre point ∅ 60° A	mm	22	32	40
maximum radial run-out	mm		0.005	
Centre point length C	mm	27.5	40	49.5
maximum speed	rpm	6300	3800	3000
for workpiece weight	kg	400	800	2000



Revolving lathe centres

- Body and live centre hardened.
- Live centre through hardened, multiple regrinding possible.
- Precision roller bearings for high concentricity.
- Maintenance-free due to lifetime lubrication.
- Special seal prevents ingress of dirt and coolant.

32 0660 – ■ Point angle 60°.

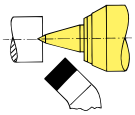
32 0670 – ■ **With extended centre,** point angle 60° / 30°.

Application: For all types of lathe, equally suitable for roughing and finish turning.

32 0670 – Extended point allows unobstructed access for the turning tool on the end face of the component. Particularly suitable for copy turning.

32 0660

32 0670



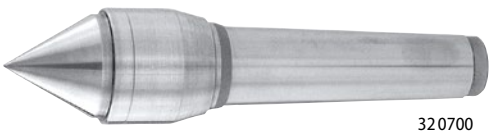
Extended point
for unobstructed access to the turning tool.

Morse taper		1	2	3	4	5	6
35R **32 0660**	Revolving lathe centre **60°**	XXX	XXX	XXX	XXX	XXX	XXX
35R **32 0670**	Revolving lathe centre with extended point **60°/30°**	XXX	XXX	XXX	XXX	XXX	(XXX)
Body ∅ D (32 0660) mm		34.5	43	48.5	68.5	88.5	102.5
Body ∅ D (32 0670) mm		34.5	43	58.5	68.5	88.5	102.5
Reach B (32 0660) mm		60.5	65	70.5	102.5	129	152
Reach B (32 0670) mm		70.5	75	95.5	114.5	143.5	172.5
largest centre point ∅ 60° A (32 0660) mm		15	20	22	32	40	50
largest centre point ∅ 60° A (32 0670) mm		15	20	25	32	40	50
largest centre point ∅ 30° A (32 0670) mm		9	10	12	14	16	18
maximum radial run-out mm		0.005	0.005	0.005	0.005	0.005	0.01
Centre point length C (32 0670) mm		27	34	47	53	64	78
for workpiece weight (32 0660) kg		100	200	400	800	2000	3500
for workpiece weight (32 0670) kg		80	140	400	500	1200	2500

POINTTECH Revolving lathe centres – precision version with slim body

- **Extremely slim body and high concentricity.**
- Precision needle and thrust bearings result in a maximum variation of 0.003 mm and a very small body ∅.
- Taper and chamfered parts are made of hardened bearing steel (61 – 63 Rockwell).

Application: For turning and grinding **where a small head ∅ and high accuracy are required.**



32 0700

32 0900

With extended point 60°/30°.

Morse taper		2	3	4	5
34D **32 0700**	Revolving lathe centre high precision version **Point angle 60°**	XXX	XXX	XXX	XXX
34D **32 0900**	Revolving lathe centre high precision version **Point angle 60°/30°**	XXX	XXX	XXX	XXX
Body ∅ D mm		28	34	45	62
Reach B mm		28	32	48	54
largest centre point ∅ 60° A (32 0700) mm		24	28	40	54
largest centre point ∅ 60° A (32 0900) mm		12	12	14	18
largest centre point ∅ 30° A (32 0900) mm		23	28	40	54
maximum radial run-out mm		0.003			
for workpiece weight kg		180	270	430	790

Garant Revolving lathe centre – for particularly high loads – with draw-off nut

- **With extended centre and draw-off nut, specially for CNC machines.**
- **Complete tool hardened and ground.**
- Special roller bearings for high loads and speeds.
- Live centre through hardened, can be reground many times.
- Maintenance-free due to lifetime lubrication.
- Special seal prevents ingress of dirt and coolant.

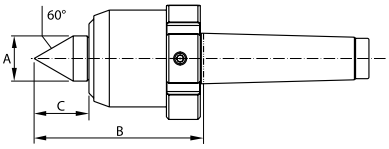
32 1255 – Point angle 60°.
32 1260 – Point angle 60°/30°

Application: For high loads and speeds, specially for NC machines.
32 1260 – Extended point allows unobstructed access for the turning tool on the end face of the component. Particularly suitable for copy turning.
32 1265 – Flexible application thanks to exchangeable inserts. For general use on turrets and counter-spindles on CNC machines.

Optional extras:
32 1265 – Exchangeable inserts No. 320627 - 320631

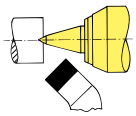
Note: Draw-off nut for NC machines to remove tip from tailstock sleeve.
32 1265 – Changing the inserts in the key surfaces by counter-rotation.

32 1255



Morse taper		3	4	5
31Z 32 1255	Revolving lathe centre **60°**	XXX	XXX	XXX
31Z 32 1260	Revolving lathe centre **60° / 30°**	XXX	XXX	XXX
31Z 32 1265	Revolving lathe centre **for interchangeable heads.**	XXX	XXX	XXX
Body ∅ D (32 1255, 32 1260)	mm	52	60	72
Reach B (32 1255)	mm	94	106	136
Reach B (32 1260)	mm	104	116	146
largest centre point ∅ 60° A (32 1255)	mm	25	28	35
largest centre point ∅ 60° A (32 1260)	mm	8	8	10
largest centre point ∅ 30° A (32 1260)	mm	25	28	35
maximum radial run-out (32 1255, 32 1260)	mm		0.003	
maximum radial run-out (32 1265)	mm		0.005	
Centre point length C (32 1255)	mm	30	35	43
Centre point length C (32 1260)	mm	40	45	53
maximum speed	rpm	12000	10000	8000
for workpiece weight (32 1255)	kg	600	1200	2200
for workpiece weight (32 1260)	kg	500	1000	2000
for workpiece weight (32 1265)	kg	400	800	1400
L_1 (32 1265)	mm	56	63	82
L_2 (32 1265)	mm	10	10	14
∅ D_1 (32 1265)	mm	12	14	18
∅ D_2 (32 1265)	mm	25	28	35
suitable for colour code (32 1265)				

32 1260


Extended point for unobstructed access to the turning tool.

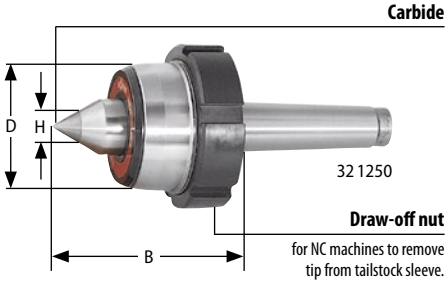
32 1265

RÖHM Rotating lathe centres with draw-off nut and carbide insert

- Tip angle 60°.
- **With carbide tip for small centres and draw-off nuts.**
- Body and live centre are hardened (multiple regrinding possible).
- Precision roller bearings for high concentricity.
- Maintenance-free due to lifetime lubrication.
- Special seal prevents ingress of dirt and coolant.

Application: For machining **thin components at high speeds.**

Morse taper		2	3	4	5
35R 32 1250	Revolving lathe centre with carbide insert and draw-off nut	(XXX)	(XXX)	(XXX)	(XXX)
Body ∅ D	mm	45	74	70	90
Reach B	mm	65	79.4	102.5	129
Carbide ∅ H	mm	11	14	14	18
maximum radial run-out	mm		0.005		
for workpiece weight	kg	120	360	500	1000



32 1250

Colour code: K12 K14 K18

Garant Universal revolving lathe centres – with exchangeable inserts

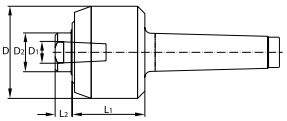
- **Complete tool hardened and ground.**
- With interchangeable inserts.
- Body and live centre are die-forged and hardened.
- Precision roller bearings guarantee high concentricity.
- Special seal prevents ingress of dirt and coolant.
- Maintenance-free due to lifetime lubrication.

Application: Suitable for one-off production of various components due to 6 different inserts.

Supplied with: 1 lathe centre No. 320659, 1x each copying punch 60° / 30°, small centre punch 60°, large centre punch 60°, point 60°, hollow point 60°, hollow punch 60°.
With modular box with foam inlay.

Optional extras: Exchangeable inserts No. 320625 - 320631

Morse taper		2	3	4	5
31Z 32 1335	Revolving lathe centre with inserts	XXX	XXX	XXX	XXX
Body ∅ D	mm	45	60	76	96
maximum radial run-out	mm	0.005	0.005	0.007	0.01
maximum speed	rpm	5000	4300	3200	2600
for workpiece weight	kg	50	200	300	800
L_1	mm	43	50	58	72
L_2	mm	10	12	13	14
∅ D_1	mm	12	14	18	24
∅ D_2	mm	20	24	32	42
suitable for colour code					



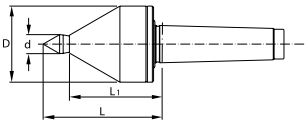
Garant Revolving combination lathe centres 60°/60°

- Tool fully hardened and ground.
- Bearings designed to take high axial forces.
- Maintenance-free greased for life.
- Shaft seal prevents ingress of dirt and cooling fluids.

Application:
- Combi tool for standard centring and machining pipes.
- Perfect all-purpose tip for general use on manual and CNC machines.

32 1360

very large ∅ / Morse taper		54/2	54/3	64/3	64/4	86/4	86/5
31Z 32 1360	Precision revolving lathe centre with extended point	XXX	XXX	XXX	XXX	XXX	XXX
smallest ∅ d	mm	13	13	16	16	19	19
reduced head length L_1	mm	68.5	68.5	78	78	93.5	93.5
Head length L	mm	86.5	86.5	100	100	121.5	121.5
maximum radial run-out	mm	0.005					
maximum speed	rpm	4200	4200	3800	3800	3200	3200
for workpiece weight	kg	170	170	330	330	550	550
Taper angle a	degrees	60° / 60°					



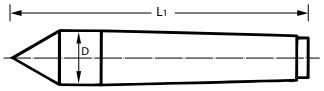
HOLEX Solid lathe centres

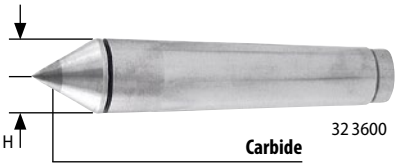
Point angle 60°, surfaces ground.

32 3400 – Full point of tool steel, through hardened.
32 3600 – Full point with deep inserted **carbide centre.**
32 3800 – **Half point** with deep inserted **carbide centre.** This offers particularly good access for the turning tool to the end face of the component.
32 3600/3800 – The carbide tipped lathe centres are marked with a groove to indicate maximum regrinding allowance.

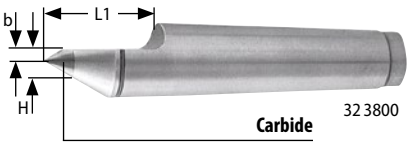
Standard: **DIN 806**

32 3400





32 3600



32 3800

Morse taper		1	2	3	4	5
32L 32 3400	Solid lathe centre WS	XXX	XXX	XXX	XXX	XXX
32L 32 3600	Solid lathe centre with carbide insert	XXX	XXX	XXX	XXX	XXX
32L 32 3800	Solid half centre with carbide insert	–	XXX	XXX	XXX	–
External ∅ D	mm	12.2	18	24.1	31.6	44.7
Overall length L	mm	80	100	125	160	200
Carbide ∅ H (32 3600, 32 3800)	mm	7	7	11	14	18
Face length L_1	mm	–	30	38	50	–
Face-point distance b	mm	–	2	3	5	–

Colour code: K12 K14 K18 K24

Fixed solid carbide lathe centre

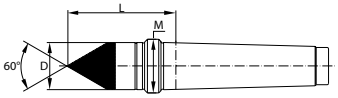
- High-precision solid carbide tip. Close-fitting carbide design for optimum stability and freedom from breakage, **no additional safety equipment required.**
- Tip angle 60°.
- High surface quality on the shank for optimum fit.
- Complete tool hardened and ground.
- With carbide tips for applications with high wear.

Application: For grinding high-precision components.

Optional extras: Draw-off nut No. 323230.

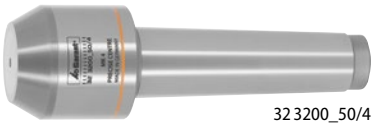
Note: Order the draw-off nut separately. Geometric dimensions to DIN 806 E.

32 3200_32/4

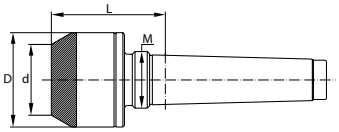


32 3210_50/4

32 3210_32/4



32 3200_50/4



very large ∅ / Morse taper		18/2	24/3	40/3	50/3	60/3	70/3
31Z 32 3200	Fixed solid carbide lathe centre 60°	XXX	XXX	XXX	XXX	XXX	XXX
Head length L	mm	36	44	44	44	44	44
External ∅ D	mm	18	24.1	40	50	60	70
∅ d	mm	–	–	25	35	45	55
maximum radial run-out	mm	0.001					

very large ∅ / Morse taper		32/4	40/4	50/4	60/4	70/4	80/4	44/5
31Z 32 3200	Fixed solid carbide lathe centre 60°	XXX	XXX	XXX	XXX	XXX	XXX	XXX
Head length L	mm	57.5	57.5	57.5	57.5	57.5	57.5	70.5
External ∅ D	mm	31.6	40	50	60	70	80	44.7
∅ d	mm	–	25	35	45	55	65	–
maximum radial run-out	mm	0.001						

very large ∅ / Morse taper		18/2	24/3	40/3	50/3	60/3	70/3
31Z 32 3210	Fixed solid carbide lathe centre 60° **with push-off thread**	XXX	XXX	XXX	XXX	XXX	XXX
Head length L	mm	48	57	57	57	57	57
External ∅ D	mm	18	24.1	40	50	60	70
∅ d	mm	–	–	25	35	45	55
maximum radial run-out	mm	0.001					
Thread M		M22×1.5	M27×1.5	M27×1.5	M27×1.5	M27×1.5	M27×1.5

very large ∅ / Morse taper		32/4	40/4	50/4	60/4	70/4	80/4	44/5
31Z 32 3210	Fixed solid carbide lathe centre 60° **with push-off thread**	XXX	XXX	XXX	XXX	XXX	XXX	XXX
Head length L	mm	72.5	72.5	72.5	72.5	72.5	72.5	87.5
External ∅ D	mm	31.6	40	50	60	70	80	44.7
∅ d	mm	–	25	35	45	55	65	–
maximum radial run-out	mm	0.001						
Thread M		M36×1.5	M36×1.5	M36×1.5	M36×1.5	M36×1.5	M36×1.5	M48×1.5

Draw-off nuts

Dimensions to DIN 807.

Suitable for: No. 323210.

Application: For drawing off tools with draw-off threads. Specially for CNC machines without through-bored sleeves.

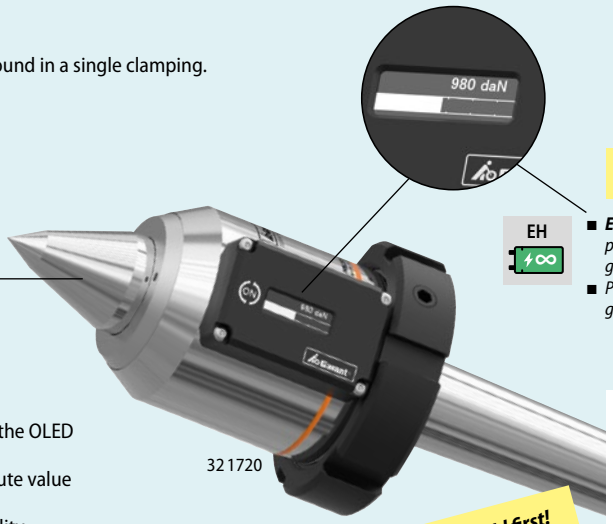
Type		M22	M27	M36	M48
31Z 32 3230	Draw-off nut	XXX	XXX	XXX	XXX
Thread		M22×1.5	M27×1.5	M36×1.5	M48×1.5
Width	mm	15.5	17.5	21	23
Width across flats AF		32	41	55	75
for MT		2	3	4	5

32 3230

Garant Digital lathe centre

- Top quality "Made in Germany".
- Precise and long-lived.
- Tool through hardened, internally and externally ground in a single clamping.
- Lubricated for life.
- Punch axis of through-hardened steel.
- Shaft seal prevents ingress of dirt and coolant.

Very high concentricity
Point is not ground until it is mounted.



No batteries required!

EH

- ***Energy harvesting*** *(tool with no battery) power supply for the pressure indicator generated by rotation of the lathe centre.*
- *Power is obtained from the integral generator.*

- Simple visual display of the axial clamping force via the OLED display on the outer body of the housing.
- Digital real-time pressure indicator both as an absolute value and as a bar in the display.
- Bright display with high contrast for optimum legibility during the machining process.
- Splash-proof to IP55.

Exclusive world first!

reddot design award winner 2019

IP 55 EH

Garant Rotating lathe centres with analogue or digital pressure indicator and draw-off nut

- The momentary clamping pressure is directly readable on the analogue or digital display on the base body.
- The live centre is supported by a disc spring pack with a spring travel of approx. 3.7 mm analogue and 2.6 mm or 2.8 mm digital.
- Short sturdy design with active longitudinal axis. Live centre through hardened and finish ground.
- **Maximum accuracy due to precision roller bearings.**
- With push-off thread and push-off nut.
- With special seal against dirt and coolant ingress, maintenance-free due to lifetime lubrication.

32 1730 – Point angle 60°.
32 1720/1740 – **With extended centre,** point angle 60°/40°.

Application: Whenever **the clamping force should be kept within certain limits,** either to prevent deformation of the component or to ensure secure clamping with sufficient pressure.

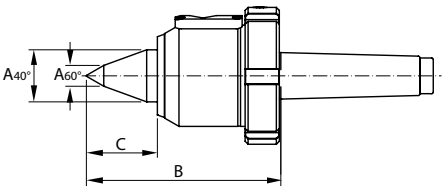
- As **a tailstock centre in conjunction with hydro-mechanical face drivers** No. 327450 – 327540 because the drive teeth have to dig into the component.
- For components that expand significantly due to high machining heat.
- For clamping **long slender components to prevent lateral displacement.**
- **For clamping heavy components where a controlled clamping force is required.**

32 1720

32 1730

32 1740

Morse taper		3	4	5
31Z 32 1720	Revolving lathe centre with digital pressure indicator and extended point	XXX	XXX	XXX
31Z 32 1730	Revolving lathe centre with analogue pressure indicator	XXX	XXX	XXX
31Z 32 1740	Revolving lathe centre with analogue pressure indicator and extended point	XXX	XXX	XXX
Body ∅ (32 1720)	mm	70	70	96
Body ∅ (32 1730, 32 1740)	mm	60	68	92
Reach B (32 1720)	mm	150	149	179
Reach B (32 1730)	mm	107	120	146
Reach B (32 1740)	mm	115	131	162
largest centre point ∅ 60° A (32 1720)	mm	35	35	50
largest centre point ∅ 60° A (32 1730, 32 1740)	mm	28	35	50
largest centre point ∅ 40° A (32 1720, 32 1740)	mm	12	14	18
maximum radial run-out	mm		0.005	
Centre point length C (32 1720)	mm	46	45	64
Centre point length C (32 1730)	mm	31	37	51
Centre point length C (32 1740)	mm	39	48	67
for workpiece weight (32 1720)	kg	300	500	900
for workpiece weight (32 1730)	kg	250	550	1000
for workpiece weight (32 1740)	kg	200	500	800
maximum axial clamping force (32 1720)	daN	1080	1080	1270
maximum axial clamping force (32 1730, 32 1740)	daN	950	1000	1430



Revolving lathe centres –with pressure indicator

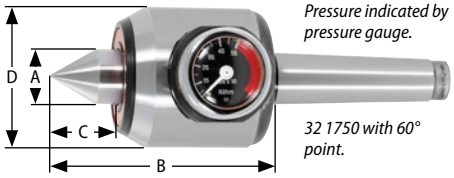
- The adjusting pressure (clamping force) is directly readable on the manometer sight glass in daN.
- The live centre, which is supported by a disc-spring pack, has a long spring travel.
- Short sturdy design with active longitudinal axis. Live centre through hardened and finish ground.
- **Maximum accuracy due to precision roller bearings.**
- With special seal against dirt and coolant ingress, maintenance-free due to lifetime lubrication.

32 1750 – Point angle 60°.

32 1770 – **With extended centre,** point angle 60° / 30°.

Application: Whenever **the clamping force has to be kept within certain limits,** either to prevent deformation of the component or to ensure secure clamping with sufficient pressure.

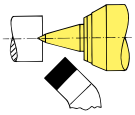
- As **a tailstock centre in conjunction with hydro-mechanical face drivers** No. 327450 – 327540 because the drive teeth have to dig into the component.
- For components that expand significantly due to high machining heat.
- For clamping **long slender components to prevent lateral displacement.**
- **For clamping heavy components where a controlled clamping force is required.**



Pressure indicated by pressure gauge.

32 1750 with 60° point.

32 1770 with extended point 60°/30°.



Extended point for unobstructed access to the turning tool.

Morse taper		3	4	5
35R 32 1750	Revolving lathe centre with pressure indicator	(XXX)	–	(XXX)
35R 32 1770	Revolving lathe centre with pressure indicator and extended point	XXX	XXX	(XXX)
Body ∅ D	mm	64	72	95
Reach B (32 1750)	mm	105	–	160.5
Reach B (32 1770)	mm	120	137.5	177.5
largest centre point ∅ 60° A	mm	11	14	15
largest centre point ∅ 30° A	mm	25	32	40
maximum radial run-out	mm		0.01	
Centre point length C (32 1770)	mm	45.5	52.5	66
for workpiece weight (32 1750)	kg	400	–	1600
for workpiece weight (32 1770)	kg	260	550	1100
maximum axial clamping force	daN	550	900	1500

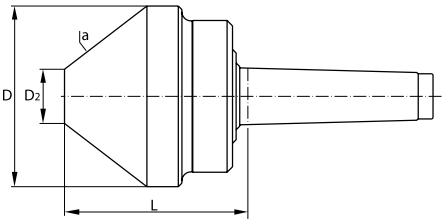
Revolving bull-nosed centres

- **The front of the centre is bull-nosed.**
- Particularly sturdy design **with oversize bearings.**
- The bearings have a special lubricant and require no maintenance.
- The centring taper and tapered arbor are made of high quality material, through hardened and finish ground.

Application: For machining **hollow parts, tubes** etc. Particularly suitable for heavy machining where at the same time high accuracy is required.

very large ∅ / Morse taper		60/2	80/3	100/3	100/4	125/4
31Z 32 3000	Bull-nosed centre	XXX	XXX	XXX	XXX	XXX
smallest ∅	mm	20	30	30	30	50
Head length L	mm	73	86	100	101	91
maximum radial run-out	mm	0.005	0.005	0.005	0.005	0.007
maximum speed	rpm	4000	3500	3000	3000	3000
for workpiece weight at D	kg	200	450	500	650	800
for workpiece weight at D1	kg	140	250	250	300	500
Taper angle a	degrees	60	60	75	75	75

very large ∅ / Morse taper		125/5	150/5	200/5	150/6	200/6
31Z 32 3000	Bull-nosed centre	XXX	XXX	XXX	XXX	XXX
smallest ∅	mm			50		
Head length L	mm	92	112	136	112	136
maximum radial run-out	mm	0.007	0.007	0.01	0.01	0.01
maximum speed	rpm	3000	2800	1800	2800	1800
for workpiece weight at D	kg	1800	1900	2000	2800	2800
for workpiece weight at D1	kg	1400	1200	1000	2000	1800
Taper angle a	degrees			75		



Constant-speed face driver, attachable drive head

Constant-speed face driver set in a wooden box, working range Ø 13 – 100 mm

- Point angle 60°, clamping Ø 8 - 80 mm.
- A pre-loaded axially adjustable disc spring pack compensates for differences in centre depths.
- The centre can be reground easily.

Application: For mounting in the headstock taper of the lathe.

Supplied with: 1 base body No. 327520 (for clockwise and anticlockwise rotation),
1 centre No. 327660, 6 mm Ø, for driver head size 13 - 24,
1 centre No. 327660, 12 mm Ø, for driver head size 21 - 40,
4 driver heads for working range Ø 13 – 100 mm
(No. 327600 and 327610: Sizes 13 – 24, 21 – 40, 33 – 64; No. 327640 and 327650: Sizes 51 – 100).
Supplied in a wooden box with space for another 6 driver heads and 3 centres
(for the complete working range Ø 9 - 160 mm).

Note: Counterpart to 321750 and 321770.

Application example:
The drive heads are compensated by hydraulic support rams. This means that component face angles up to 5° can be accommodated.

32 7450

Fast changeover of attachable driver heads. These heads and the exchangeable spring centres fit all base body sizes.

Morse taper			3	4	5	6
35R 32 7450	Set of face drivers in a wooden box **right-hand**		XXX	XXX	XXX	(XXX)
35R 32 7460	Set of face drivers in a wooden box **left-hand**		–	(XXX)	–	(XXX)
Working range Ø		mm	13 – 100			
Centre tip Ø		mm	6 / 12			
Weight		kg	3.9	4.3	4.9	6.6

32 7450

Base body for face driver

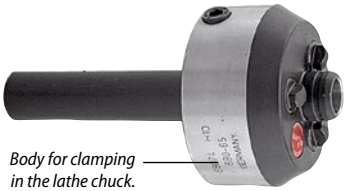
- Without centre and driver heads.
- All driver heads No. 327600 – 327650 and centres No. 327660 fit base bodies sizes 3 – 6.
- For clockwise and anticlockwise rotation.

Note: Counterpart to 321750 and 321770.

Morse taper			3	4	5
35R 32 7520	Base body for face driver **with Morse taper**		XXX	XXX	(XXX)
maximum body Ø		mm		70	
Length from spindle		mm	54	56.5	56.5
Weight		kg	1.6	1.8	2.8

32 7520

35R 32 7540	Base body for face driver for clamping **in the chuck**		XXX
Clamping shank Ø		mm	25
Clamping shank length		mm	45
Body Ø		mm	85
Weight		kg	2.3



Body for clamping in the lathe chuck.

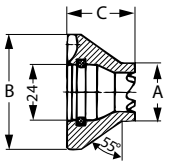
32 7540

Driver head

32 7600/7610 – **Direct toothed** driver heads

32 7640/7650 – Driver heads with **interchangeable carbide drive teeth.**

Application: To replace or extend working range of sets No. 327450 / 7460 and for base bodies No. 327520 / 7540.

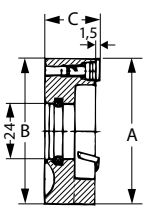


32 7600 / 7610 direct toothed.

32 7600

Working range Ø		mm	9-16	11-20	13-24	17-32	21-40	26-50	33-64
35R 32 7600	Driver head **right-hand**		XXX	XXX	XXX	XXX	XXX	XXX	XXX
35R 32 7610	Driver head **left-hand**		XXX	XXX	XXX	XXX	XXX	XXX	XXX
Clamping Ø A		mm	8	10	12	16	20	25	32
External Ø B		mm				43			
Length C		mm	38	38	36	33	30	30	30
for which suitable centre point Ø D		mm	4	4	6	10	12	16	16

Working range Ø		mm	21-40	26-50	33-64	41-80	51-100	64-126	81-160
35R 32 7640	Driver head **right-hand**		XXX	(XXX)	XXX	(XXX)	(XXX)	(XXX)	(XXX)
35R 32 7650	Driver head **left-hand**		(XXX)	XXX	XXX	(XXX)	(XXX)	–	(XXX)
Clamping Ø A		mm	20	25	32	40	50	63	80
External Ø B		mm	43	43	43	40	50	63	80
Length C		mm	30	30	30	24	24	24	24
for which suitable centre point Ø D		mm	6	10	16	16	16	16	16



32 7640

Centres

Suitable for: Base bodies No. 327520 / 327540 (all sizes).

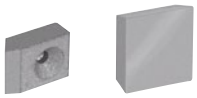
32 7660

Centring tip ∅ D		mm	4	6	10	12	16
35R 32 7660	Centring drill		XXX	XXX	XXX	XXX	XXX

Carbide driving plate

Suitable for:

32 7670 – Driver heads No. 327640 / 7650 size 21– 40; 26–50 and 33–64.
32 7680 – Driver heads No. 327640 / 7650 size 41–80; 51–100; 64–126 and 81–160.


32 7670 32 7680

35R 32 7670	Carbide driving plate	1 piece	XXX
Side length		mm	6
Thickness		mm	3.2

35R 32 7680	Carbide driving plate	1 piece	XXX
Side length		mm	9.5
Thickness		mm	3.2

Push-out and draw-in collets

Collets, **round profile in 1 mm increments. Please specify required clamping ∅ with order.**

Accuracy: **Concentricity tolerances:**
D = 1 to 10 mm = 0.02 mm D = 10 to 30 mm = 0.03 mm D = 30 to 60 mm = 0.04 mm

Note: Other diameters and profiles (e.g. square or hexagon) **on request!**

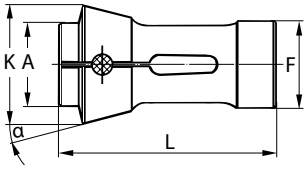
Other types and special collets available on request.

Push-out collets

Standard: **DIN 6343**

Note:
32 9550 – Profile ∅ 1.0 – 8.0 mm smooth. From ∅ 8.5 mm with transverse serrations.
32 9555 – Profile ∅ 4.0 – 8.0 mm smooth. From ∅ 9.0 mm with transverse serrations.

32 9550



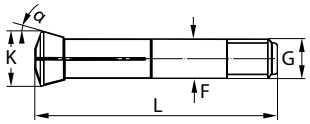
Clamping ∅		mm	3 ... 42	4 ... 60
34D 32 9550	FAHRION® PRÄZISION Round push-out collet to DIN 6343	173 E	XXX	–
34D 32 9555		185 E	–	(XXX)
F		mm	48	66
A		mm	50	73
K		mm	60	84
Overall length L		mm	94	110
Angle α		degrees	15	

Draw-in collets

32 9705 – Saw thread
32 9755 – Trapezoidal thread

Standard: **DIN 6341**

32 9755



Clamping ∅		mm	3 ... 18	3 ... 29
32B 32 9705	HOLEX Round draw-in collet to DIN 6341	355 E	XXX	–
32B 32 9755		386 E	–	XXX
F		mm	20	32
K		mm	28	45
Overall length L		mm	123	115
Buttress thread G		mm	20×2	–
Trapezoidal thread G		mm	–	32×1.5
Angle α		degrees	17.5	20

The Hainbuch modular system – for round interface (RB) and hexagonal interface (SE)

Quick conversion from external clamping to **internal clamping.** No need for alignment, high assembly accuracy (< 0.003 mm).

Mando Adapt
8 different mandrel ranges
Clamping range ∅ 8 – 120 mm

Remove the clamping head

Insert the MANDO Adapt

Attach the segment clamping socket

Screw in the tensioning bolt

Clamping media set up

HAINBUCH Manual stationary chuck MANOK

32 9810 – Stationary chuck of solid cast. High clamping force, precision and stiffness.
32 9830 – Changeover device for manual clamping head change.

Suitable for:

32 9835 – Clamping head for boring out No. 329916 / 9926 / 9936 / 9946 / 9976.

Application:

32 9810/9830 – Versatile application, e.g. machining centres, measuring machines, pillar drills.

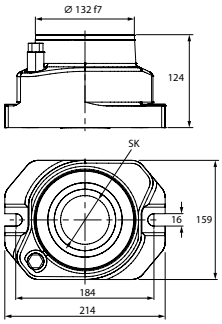
Supplied with:

32 9810 – Including 1 chuck key.

Note:
32 9810 Size 80 – For dimensions, see the eShop.
32 9810/9830 – For suitable clamping heads see No. 329910 - 329936.

Ground f7 for front stop option.

32 9835



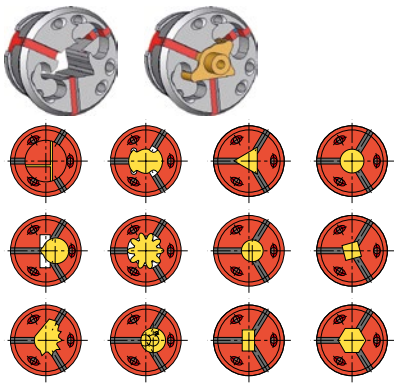
32 9830

Clamping head SK			42	52	65	80
33H 32 9810	Stationary chuck MANOK		(XXX)	(XXX)	(XXX)	(XXX)
33H 32 9830	Manual changeover device for MANOK		(XXX)	(XXX)	(XXX)	(XXX)
33H 32 9835	Twist-out ring for clamping heads		(XXX)	(XXX)	(XXX)	(XXX)
Weight (32 9810)		kg	15	14	13	23

HAINBUCH Clamping heads version RD

Clamping heads, **round profile, in 0.5 mm or 1 mm increments. Please specify the required clamping Ø when ordering.**

Note: **Clamping heads for special profiles to your individual requirements on request.**
Other taper sizes and shapes (e.g. square) and machinable blanks **on request!**



Clamping Ø (0.5 mm increments)		mm	4...42			
33H 32 9910	Clamping head **smooth**	SK 42	(XXX)			
Clamping Ø (0.5 mm increments)		mm	8...10			
33H 32 9912	Clamping head **with transverse serrations.**	SK 42	(XXX)			
Clamping Ø (0.5 mm increments)		mm	11...42			
33H 32 9914	Clamping head **with transverse and longitudinal serrations.**	SK 42	(XXX)			
Initial bore Ø		mm	8	15	30	
33H 32 9916	Clamping head **soft**	SK 42	(XXX)	(XXX)	(XXX)	
Clamping Ø (0.5 mm increments)		mm	4...52			
33H 32 9920	Clamping head **smooth**	SK 52	(XXX)			
Clamping Ø (0.5 mm increments)		mm	8...10			
33H 32 9922	Clamping head **with transverse serrations.**	SK 52	(XXX)			
Clamping Ø (0.5 mm increments)		mm	11...52			
33H 32 9924	Clamping head **with transverse and longitudinal serrations.**	SK 52	(XXX)			
Initial bore Ø		mm	8	15	30	
33H 32 9926	Clamping head **soft**	SK 52	(XXX)	(XXX)	(XXX)	
Clamping Ø (0.5 mm increments)		mm	3...65			
33H 32 9930	Clamping head **smooth**	SK 65	(XXX)			
Clamping Ø (0.5 mm increments)		mm	8...10			
33H 32 9932	Clamping head **with transverse serrations.**	SK 65	(XXX)			
Clamping Ø (0.5 mm increments)		mm	11...65			
33H 32 9934	Clamping head **with transverse and longitudinal serrations**	SK 65	(XXX)			
Initial bore Ø		mm	5	8	20	40
33H 32 9936	Clamping head **soft**	SK 65	(XXX)	(XXX)	(XXX)	(XXX)
Clamping Ø (1 mm increments)		mm	5...80			
33H 32 9940	Clamping head **smooth**	SK 80	(XXX)			
Clamping Ø (1 mm increments)		mm	8	9	10	
33H 32 9942	Clamping head **with transverse serrations.**	SK 80	(XXX)	(XXX)	(XXX)	

*Clamping head **smooth,** for boring out.*

*Clamping head with **transverse serrations** for small Ø raw material.*

*Clamping head with **transverse and longitudinal serrations,** for raw material.*

Clamping ∅ (1 mm increments)		mm	11...80			
33H 32 9944	Clamping head **with transverse and longitudinal serrations.**	**SK 80**	(XXX)			
Initial bore ∅		mm	8	20	40	60
33H 32 9946	Clamping head **soft**	**SK 80**	(XXX)	(XXX)	(XXX)	(XXX)
Clamping ∅ (1 mm increments)		mm	15...100			
33H 32 9950	Clamping head **smooth**	**SK 100**	(XXX)			
Clamping ∅ (1 mm increments)		mm	15...24			
33H 32 9952	Clamping head **with transverse serrations**	**SK 100**	(XXX)			
Clamping ∅ (1 mm increments)		mm	25...100			
33H 32 9954	Clamping head **with transverse and longitudinal serrations**	**SK 100**	(XXX)			
Initial bore ∅		mm	15	30	45	65	90
33H 32 9956	Clamping head **soft**	**SK 100**	(XXX)	(XXX)	(XXX)	(XXX)	(XXX)

*Clamping head **soft,** removable with changover device.*

HAINBUCH Manual stationary chuck MANOK plus

32 9960 – Stationary chuck of solid cast. High clamping force, precision, and stiffness. Ground face for horizontal mounting, integral stop.

Suitable for:

32 9960 Size RD65 – Clamping heads No. 329910 – 329946.

Size SE65 – Clamping heads No. 329970 – 329976.

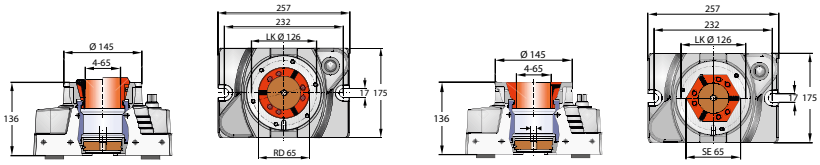
Application:

32 9960 – Versatile application e. g. machining centres, measuring machines, pillar drills etc.

Supplied with:

32 9960 – Including 1 chuck key.

32 9960



32 9965

Type / size		RD65	SE65
33H 32 9960	Stationary chuck MANOK plus	(XXX)	(XXX)
33H 32 9965	Changeover device, manual, for MANOK plus	(XXX)	(XXX)
Weight (32 9960)	kg	23.5	

HAINBUCH Clamping heads – SE version (Top 65)

Clamping heads, **round profile, in 0.5 mm increments. Please specify required clamping ∅ with order.**

32 9970 – Smooth version for precision machining.

32 9972 – With transverse serrations for raw material, small ∅.

32 9974 – With transverse and longitudinal serrations for raw material.

32 9976 – Soft (reduced hardness of 40 HRC in the bore) for boring out.

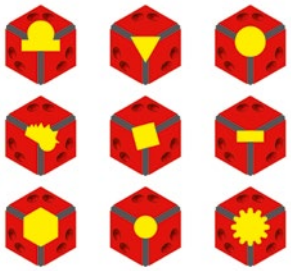
Advantage:

- **25% greater clamping force** than clamping head RD.
- No radial movement between clamping head and clamping element mounting, therefore immune to dirt.
- **Unique stiffness due to large seating area of the clamping segments.**

Application: Versatile application range, machining centres, measuring machines or pallet clamping.

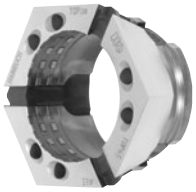
Recommendation: **Clamping heads for special profiles to your individual requirements on request.**

Note:	Other taper sizes and shapes (e.g. square) and machinable blanks **on request!**



32 9970

32 9972



32 9974

32 9976

Clamping ∅ (0.5 mm increments)		mm	4...65			
33H 32 9970	Clamping head **smooth**	**Top 65**	(XXX)			
Clamping ∅ (0.5 mm increments)		mm	8...10			
33H 32 9972	Clamping head **with transverse serrations.**	**Top 65**	(XXX)			
Clamping ∅ (0.5 mm increments)		mm	11...65			
33H 32 9974	Clamping head **with transverse and longitudinal serrations**	**Top 65**	(XXX)			
Initial bore ∅		mm	5	8	20	40
33H 32 9976	Clamping head **soft**	**Top 65**	(XXX)	(XXX)	(XXX)	(XXX)

EDALMATIC tapping heads

- For machines with only one direction of rotation.
- Adjustable safety clutch protects tap from breakage.
- Length compensation by tension and compression, compensating for difference between machine feed and thread pitch.
- Automatic feed; ensures thread is true to gauge size.
- Automatic quick return traverse 1.6: 1.
- Right-hand and left-hand rotation possible without conversion.
- Accepts Rubber-Flex collets and quick-change sockets.

33 3500 – Size M3–M12 and M10–M30 with double clamping mechanism.

Application:
- For cutting threads **exactly true to gauge size.**
- Can be used without changing the set up for left-hand or right-hand threads, blind and through holes.

Supplied with: Including anti-rotation arm and for No. 333500 also 2 multi-range collets (rubber-flex), 2 spanners and 1 screwdriver for hexagon socket screws to suit the tapping head!

Optional extras:

33 3500 – Multi-range collets (Rubber Flex) No 333640. For a spare clamping device No. 333630 see the spare parts list.

33 3600 – Quick-change tapping chucks No. 335420 – 335640.

Note: Suitable tapered arbors No. 342500 / 2600.

33 3500

Nut
for accurate adjustment of thread depth, ± 0.1 mm.

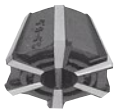
33 3600

Type		M1,4-7	M3-12	M5-20	M10-30
35D 33 3500	Rubber-Flex tapping head **for tapping collet**	XXX	XXX	XXX	XXX
35D 33 3600	Tapping head **for quick-change inserts,**	–	XXX	XXX	–
Thread range		M1.4 – M7	M3 – M12	M5 – M20	M10 - M30
∅ range of the 1st collets	mm	2.5 – 4.5	3.5 – 6.5	4.5 – 10	10 – 16
∅ range of the 2nd collets	mm	4.5 – 6.5	6.5 – 10	10 – 16	16 – 23
maximum speed, advance	rpm	1400	1100	750	350
automatic stroke length	mm	10	15	22	30
Tapered shank mount DIN 238		B 12	B 16	B 22	B 24

Tapping collets (Rubber-Flex)

Suitable for: Edalmatic tapping head No. 333500.

Clamping range shank ∅	mm	2,5-4,5	4,5-6,5	2-4,5	3,5-6,5	6,5-10	4,5-10	9-15	10-16	16-23
33F 33 3640	Multi-range collet Rubber-Flex	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
suitable for equipment type		M1.4 – M7	M1.4 – M7	M3 - M12	M3 – M12	M3 – M12	M5 – M20	M5 – M20	M10 - M30	M10 - M30
ID number of the collet		J 116	J 117	J 423	J 421	J 422	J 441	J 445	J 461	J 462

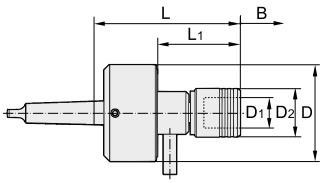


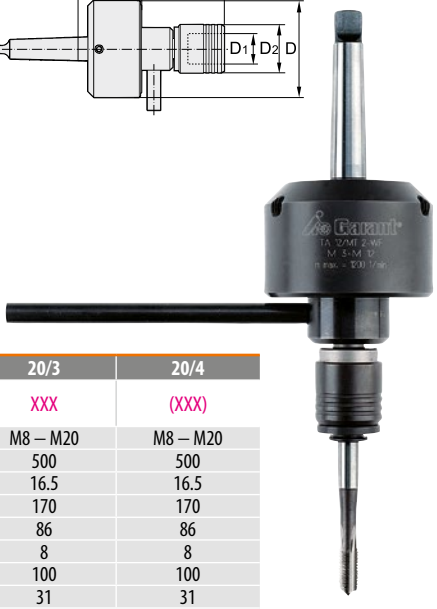
Garant Tapping heads for machines with only one direction of rotation

- With built-in reversing gears for automatic return. After reaching the thread depth, the unit automatically reverses by raising the machine spindle (low-wear ball system!).
- Accelerated return (approx. factor 1.8×n_{max}).
- Length compensation in tension.
- With anti-rotation arm.
- Maintenance-free
- For cutting right- and left-hand threads.
- With quick-change collet system.

Application: For automatic tapping on non-reversing machines with manual feed. For tapping through holes (with collets No. 335420 / 5430) and blind holes (with collets No. 335610 / 5620).

Optional extras: For quick-change tapping collets see: No. 335420 / 5430 (**without** safety clutch), No. 335610 / 5620 (**with** safety clutch).





Type		12/1	12/2	20/2	20/3	20/4
31M 33 4100	Tapping head	XXX	XXX	XXX	XXX	(XXX)
Thread range		M3 – M12	M3 – M12	M8 – M20	M8 – M20	M8 – M20
maximum speed, advance	rpm	1200	1200	500	500	500
Length compensation in tension	mm	12.5	12.5	16.5	16.5	16.5
Length from the machine spindle	mm	140	140	170	170	170
L_1	mm	60	60	86	86	86
Disengagement travel B	mm	6	6	8	8	8
External ∅ D	mm	80	80	100	100	100
∅ D_1	mm	19	19	31	31	31
∅ D_2	mm	32	32	50	50	50
Morse taper MT		1	2	2	3	4

Tapping chucks for machines with right-hand and left-hand directions of rotation

- **Double clamping** is achieved by 3 jaws which centre the tap shank and by 4 additional jaws which clamp the tap square drive.
- When set correctly, the **safety clutch** prevents tap breakage.
- Blind hole threads can be tapped down to the bottom.
- **The self-adjustment mechanism** compensates for misalignment errors between the machine spindle and the component.
- The flexible **length compensation** is effective on compression and tension. It prevents the thread being cut incorrectly with manual or power feed.

Application: For tapping internal threads on reversible drilling machines, turret lathes. Applicable horizontally and vertically for right-handed threads.

Supplied with: 1 chuck key.

Note: Variant without length compensation available on request.
Size 42 (= MT 5, for metric threads M18 – 42) **on request.**

Type		12	20	30
35B 33 4510	Tapping chuck type DSPL with shank	XXX	XXX	(XXX)
Thread range		M3 – M12	M8 – M20	M14 – M30
for Whitworth threads		G1/8 – G1/2	G1/4 – G13/16	G9/16 – G1.1/8
for Whitworth pipe threads		R1/8	R1/8 – R1/2	R1/4 – 7/8
Clamping range square	mm	0 – 8	4.7 – 12	0 – 18
Shank ∅ range	mm	2.5 – 10	6 – 16	11 – 23
pivoting parallel to axis	mm	1	1.5	2
Length compensation in compression	mm		10	
Length compensation in tension	mm	20	20	30
Length from the machine spindle	mm	135	170	230
Body ∅	mm	58	83	106
Morse taper MT		2	3	4

Quick-change tapping chuck for right-hand and left-hand rotation

- Compact design, with flexible length compensation by compression and tension.
- Adjustable lead-in pressures for different materials and taps.

Application:
- To produce threads that are true to gauge.
- For right-hand and left-hand thread.
- For NC machines and machining centres.

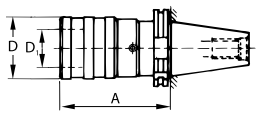
Optional extras: See No. 335420 – 335660 for quick-change tapping collets.

Note:
- Quick-change tapping heads in **other shank types size M14 – M33 available on request.**
- Quick-change tapping heads **not suitable for internal coolant supply.**

With parallel shank

With ball bearing-mounted sleeve for smooth no–play length compensation.

33 4620/4624 – Parallel shank to DIN 1835 – Form B and E.



33 4620

33 4622

Tapping range				M3-12	M6-20	M14-33
31P 33 4620	Garant	Quick-change tapping chuck	Shank ∅ 20 mm	XXX	–	–
32P 33 4622	HOLEX		Shank ∅ 20 mm	XXX	–	–
31P 33 4624	Garant		Shank ∅ 25 mm	XXX	XXX	–
32P 33 4626	HOLEX		Shank ∅ 25 mm	XXX	XXX	–
32P 33 4628	HOLEX		Shank ∅ 32 mm	–	–	XXX
Length compensation by compression			mm	7.5	12.5	20
Length compensation by tension			mm	7.5	12.5	20
External ∅ D			mm	38	55	78
∅ D_1			mm	19	31	48
Dimension A (33 4620, 33 4624, 33 4628)			mm	39	64	132.5
Dimension A (33 4622, 33 4626)			mm	41	64	–

With ISO taper (SK) to DIN

DIN 69871	ISO 7388-1

33 4630/4638 – **With ball bearing-mounted sleeve for smooth no–play length compensation.**

Optional extras: Pull studs (PS) No. 308600 – 308806. Pull stud wrenches No. 308820; 308835.

33 4630

33 4634

Tapping range				M3-12	M6-20	M14-33
31P 33 4630	Garant	Quick-change tapping chuck	SK 40	XXX	XXX	XXX
32P 33 4634	HOLEX		SK 40	XXX	XXX	–
31P 33 4638	Garant		SK 50	XXX	XXX	XXX
32P 33 4642	HOLEX		SK 50	XXX	XXX	–
Length compensation by compression			mm	7.5	12.5	24
Length compensation by tension			mm	7.5	12.5	24
External ∅ D			mm	38	55	79
∅ D_1			mm	19	31	48
Dimension A (33 4630, 33 4634)			mm	60	100	138
Dimension A (33 4638, 33 4642)			mm	62	83	133

With Morse taper (MT) to DIN

Morse taper DIN 228 B.

Tapping range				M3-12	M6-20
32P 33 4644	HOLEX	Quick-change tapping chuck	MT2	XXX	–
32P 33 4645	HOLEX	Quick-change tapping chuck	MT3	XXX	XXX
32P 33 4646	HOLEX	Quick-change tapping chuck	MT4	–	XXX
Length compensation by compression			mm	7.5	12.5
Length compensation by tension			mm	7.5	12.5
External ∅ D			mm	38	55
∅ D_1			mm	19	31
Dimension A			mm	46	70

33 4644

With hollow shank taper (HSK) / polygonal shank (PSC) to DIN

ISO 12164-1 | DIN 69893

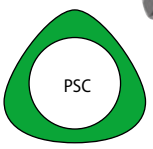
With ball bearing-mounted sleeve for smooth no–play length compensation.
Optional extras: Socket No. 309890.

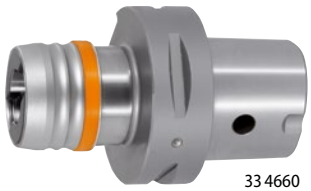
Tapping range				M3-12	M6-20	M14-33
31P 33 4652	Garant	Quick-change tapping chuck	HSK-A 63	XXX	XXX	XXX
31P 33 4656	Garant	Quick-change tapping chuck	HSK-A 100	XXX	XXX	XXX
Length compensation by compression			mm	7.5	10	17.5
Length compensation by tension			mm	7.5	12.5	17.5
External ∅ D			mm	41	60	86
∅ D_1			mm	19	31	48
Dimension A (33 4652)			mm	72	110	141
Dimension A (33 4656)			mm	80	100	144

33 4652

Tapping range				M3-12	M6-20
31M 33 4660	Garant	Quick-change tapping chuck	PSC 63	XXX	XXX
Length compensation by compression			mm	7.5	10
Length compensation by tension			mm	7.5	10
External ∅ D			mm	41	60
∅ D_1			mm	19	31
Dimension A			mm	73	97

ISO 26623-1

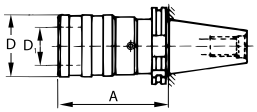



33 4660

ISO 7388-2 | JIS B6339

Optional extras: Pull studs (PS) No. 308600 – 308806. Pull stud wrenches No. 308820; 308835.

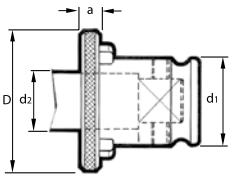
Tapping range				M3-12	M6-20	M14-33
31M 33 4662	Garant	Quick-change tapping head	BT 30	XXX	–	–
31M 33 4663	Garant	Quick-change tapping head	BT 40	XXX	XXX	–
32P 33 4665	HOLEX	Quick-change tapping head	BT 40	XXX	XXX	XXX
32P 33 4670	HOLEX	Quick-change tapping head	BT 50	XXX	XXX	XXX
Length compensation by compression			mm	7.5	12.5	20
Length compensation by tension			mm	7.5	12.5	20
External ∅ D			mm	38	55	78
∅ D_1			mm	19	31	48
Dimension A (33 4662)			mm	63	–	–
Dimension A (33 4663)			mm	68	93	–
Dimension A (33 4665)			mm	60	100	162.5
Dimension A (33 4670)			mm	62	83	141



33 4665

HOLEX Reducer for quick-change inserts

Application: For reducing large tapping heads of sizes M6 – 20 or M14 – 33 to smaller M3 – 12 or M6 – 20 quick-change inserts.



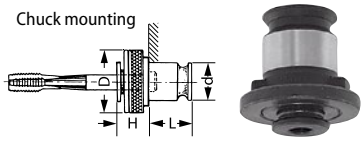
Reducer ∅ d_1 / ∅ d_2			31/19	48/19	48/31
32P 33 5665	Reducer quick-change inserts	mm	XXX	XXX	XXX
∅ D		mm	46	68	68
a		mm	4.75	8.3	8.3
for thread insert (d_2)			M3 – 12	M3 – 12	M6–20
for check size (d_1)			M6–20	M14 – 33	M14 – 33

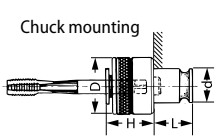
33 5665

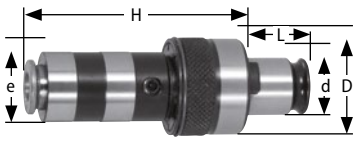
Rigid quick-change tapping collet with or without safety slip clutch

Application:
33 5420–5440 – For use with disengaging tapping head.
33 5610/5620/5640/5650/5660 – For blind holes.
33 5645/5647 – For Garant intermediate sections No. 338140 – 8142.

Note: Inserts with slip clutch are supplied with the torque setting for machining steel (R_m 600 – 800 N/mm²). The setting can be modified as required by adjusting the nut.

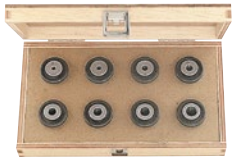






Tap shank Ø	32H 33 5420	32H 33 5430	32H 33 5440	32H 33 5610	32H 33 5620	32H 33 5640	31M 33 5645	31M 33 5647	Shank square
	HOLEX			HOLEX			Garant		
	Quick-change collet without safety slip clutch			Quick-change insert with safety slip clutch			Base extension with safety slip clutch		
mm	M3 – 12	M6 – M20	M14 – M33	M3 – 12	M6–20	M14 – 33	M3 – 12	M6–20	mm
3,5	XXX	–	–	XXX	–	–	XXX	–	2.7
4,5	XXX	–	–	XXX	–	–	XXX	–	3.4
6	XXX	XXX	–	XXX	XXX	–	XXX	(XXX)	4.9
7	XXX	XXX	–	XXX	XXX	–	XXX	(XXX)	5.5
8	XXX	XXX	–	XXX	XXX	–	XXX	(XXX)	6.2
9	XXX	XXX	–	XXX	XXX	–	XXX	(XXX)	7
10	XXX	XXX	–	XXX	XXX	–	XXX	(XXX)	8
11	XXX	XXX	XXX	XXX	XXX	XXX	–	(XXX)	9
12	–	XXX	XXX	–	XXX	XXX	–	(XXX)	9
14	–	XXX	XXX	–	XXX	XXX	–	(XXX)	11
16	–	XXX	XXX	–	XXX	XXX	–	(XXX)	12
18	–	–	XXX	–	–	XXX	–	–	14.5
20	–	–	XXX	–	–	XXX	–	–	16
22	–	–	XXX	–	–	XXX	–	–	18
25	–	–	XXX	–	–	XXX	–	–	20
28	–	–	XXX	–	–	XXX	–	–	22
Ø D mm	30	46	68	32	50	72	32	50	
Ø d mm	19	31	48	19	31	48	19	31	
L mm	21.5	35	55.5	21.5	35	55.5	21.5	35	
H mm	7	11	14	25	34	45	70	96	
Ø e mm	–	–	–	–	–	–	23	34.5	

32H 33 5460	32H 33 5470	32H 33 5650	32H 33 5660
HOLEX			
Quick-change collet set without safety slip clutch, 8 pieces	Quick-change collet set without safety slip clutch, 9 pieces	Quick-change collet set with safety slip clutch, 8 pieces	Quick-change collet set with safety slip clutch, 9 pieces
M3 – 12	M6–20	M3 – 12	M6 – M20
XXX	XXX	XXX	XXX


33 5460

33 5650

FAHRION® PRÄZISION Quick-change chuck

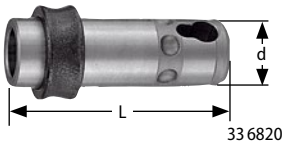
When the ring is moved down, the steel balls snap back into place in the sleeve.
Application: For quick change of subsequent tools.
Optional extras: Drill sleeves No. 336820.

Bore Ø D_1 / mounting shank mm / MT	26MK2	34MK3	46MK4
33F 33 6800 Quick-change chuck	(XXX)	(XXX)	(XXX)
Chuck outside Ø D mm	48	61	86
Overall length mm	150	176	222
Length from the machine spindle mm	75.5	82.5	104.3

33 6800

Drill sleeves for quick-change chucks

Suitable for: Quick-change chuck No. 33 6800.
Application: For tools with Morse taper and with tang such as twist drills, countersinks etc.
For tools with plain shanks, use the Morse taper clamping sleeve No. 345000.



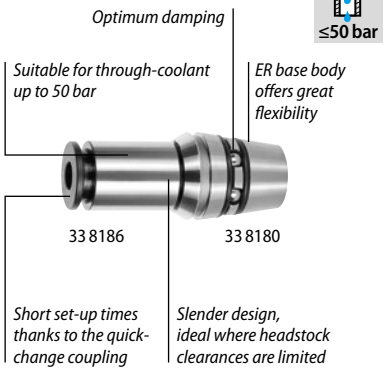
33 6820

Plug-in Ø d / internal taper mm / MT	26MK1	26MK2	34MK1	34MK2	34MK3	46MK1	46MK2	46MK3	46MK4
33F 33 6820 Drill sleeve	(XXX)	(XXX)	(XXX)	(XXX)	(XXX)	(XXX)	(XXX)	(XXX)	(XXX)
L mm	78	90	80	91	108	102	98.5	109	135
Length from chuck mm	18	30	15	26	43	20	16.5	27	53
Length from the machine spindle mm	93.5	105.5	97.5	108.5	125.5	124.3	120.8	131.3	157.3

Garant Synchro insert with ER collet base body

- Tapping and thread forming on machines with synchronised spindles.
- Minimum Length Adjustment: +0.5mm / -0.2 mm.
- Compensation for synchronisation errors, hence better thread quality and clear increase in tool life.
- For collet chucks and driven tools to ISO 15488 (DIN 6499).
- Suitable for left-hand and right-hand threads.

≤50 bar



Synchro collet

Suitable for: ER collet chuck.

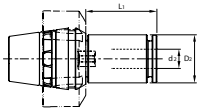
for ER collets		16	25	32
31P 33 8180	Synchro collet	XXX	XXX	XXX

Synchro tool heads

Suitable for: 33 8183 – ER synchro collet No. 338180.

Tap shank ∅ d_2	31P 33 8183	31P 33 8185	31P 33 8186	for tap shank ∅ d_2 DIN 371	for tap shank ∅ d_2 DIN 374/376	L_1			Shank square
	Synchro tool head					33 8183	33 8185	33 8186	
mm	for ER16	for ER25	for ER32			mm	mm	mm	mm
3,5	XXX	–	–	M3	M5	24	–	–	2.7
4,5	XXX	–	–	M4	M6	24	–	–	3.4
5	XXX	–	–	M4	M5	24	–	–	4
6	XXX	XXX	XXX	M5-6	M8	32	27	8	4.9
7	–	XXX	XXX	M7	M9-10	–	30	19	5.5
8	–	XXX	XXX	M8	M11	–	30	37	6.2
9	–	XXX	XXX	M9	M12	–	40	37	7
10	–	XXX	XXX	M10	–	–	41	37	8
11	–	–	XXX	–	M14	–	–	37	9
12	–	–	XXX	M12	M16	–	–	37	9
∅ D_2 mm	12.7	19	25						

33 8180_32



33 8186

Synchro ER collet adapter

Application: For use on ER collets for the synchronous arbor No. 338180 size 25.

ER external / internal		ER	25/16
31P 33 8188	ER adapter		XXX

33 8188

HOLEX Weldon element for thread tapping

Plain toolholder, hardened and ground with **quick-release coupling**. Internal square to take taps and transmit the torque. Clamping mechanism prevents the tap being pulled out.

Advantage:
- Attractively priced solution.
- Sturdy, slim version.
- Variation in the clamping and overhang lengths.

Application: To take taps and others in a Weldon arbor.

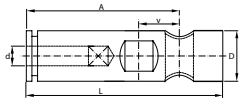
Weldon element with minimum adjustment for thread tapping

Tensile/compression compensation each of 0.2 mm by means of compensation element. Clamping of the Weldon element either by means of the drive flats or the compensation element.

Optional extras: Compensation element No. 335730.

Note: Minimum compensation function **only** in combination with No. 300415 and 335730. The standard Weldon chuck permits only rigid clamping, see No. 335740.

33 5720


33 5720

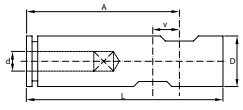
For nominal ∅ d	mm	3,5	4	4,5	6	7	8	9	10	11	12
32P 33 5720	Weldon element with compensation, short	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
32P 33 5725	Weldon element with compensation, long	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
∅ D	mm	12	12	12	14	16	16	18	18	20	20
A (33 5720)	mm	36	36	36	37	39	39.5	41.5	45.5	52	52
A (33 5725)	mm	136	136	136	137	139	139.5	141.5	145.5	152	152
Adjustment travel V	mm	10									
L (33 5720)	mm	45	45	45	45	48	48	48	48	50	50
L (33 5725)	mm	145	145	145	145	148	148	148	148	150	150

33 5730

Thread = Weldon arbor connection thread

Clamping range d	mm	3,5-6	7-10	11-12
32P 33 5730	Compensation element	XXX	XXX	XXX
Connection thread		M12×1	M14×1	M16×1

33 5740


33 5740

Rigid Weldon element for thread tapping

Two drive flats, offset by 180° and 10 mm.

For nominal ∅ d	mm	3,5	4	4,5	6	7	8	9	10	11	12	14	16
32P 33 5740	Rigid Weldon element	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
∅ D	mm	12	12	12	14	16	16	18	18	20	20	25	25
A	mm	36	36	36	37.5	39.5	39.5	41.5	45.5	52	52	56.5	56.5
Adjustment travel V	mm	10											
L	mm	49	49	49	49	52	52	52	52	54	54	69	69

≤50 bar

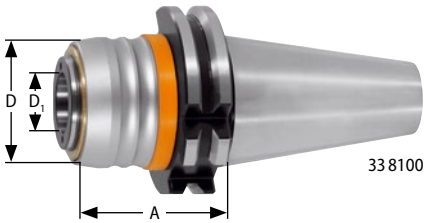
Quick-change tapping heads for synchronised spindles

- With **minimum length adjustment (MLA),** by means of a damping element.
- Increases tool life of taps/thread formers by up to 300 %.
- Internal coolant supply up to 50 bar.
- Secure clamping for ER collets in quick-change tapping collets.
- Radial run-out of shank taper to the tapping collet taper < 3 µm.

Application: On **machining centres with synchronised spindles.**
- For compensating the difference in pitch between tap and synchronised spindle.
- For compensating the pitch tolerances of taps.

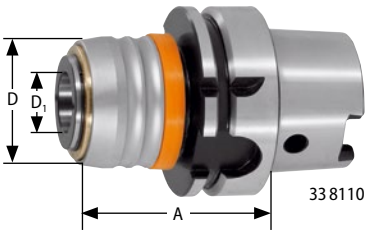
Optional extras: Quick-change tapping collets and extensions, see No. 338120 – 338142.
See No. 308600 - 308806 for pull studs.
Coolant feed pipes for HSK, see No. 309880.
Plug-in sockets for HSK, see No. 309890.

Form AD
DIN 69871
ISO 7388-1



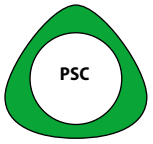
33 8100

Form A
DIN 69893

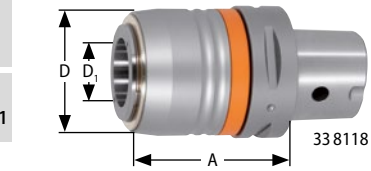


33 8110

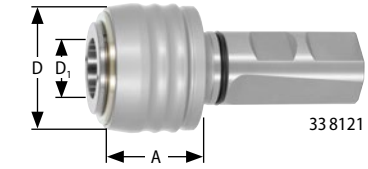
Tapping range			M1-12	M6-20
31M 33 8100	Tapping head **MLA IC 50 bar**	SK 40	XXX	XXX
31M 33 8105		SK 50	XXX	XXX
new 31M 33 8106		BT 30	XXX	–
31M 33 8107		BT 40	XXX	XXX
31M 33 8110		HSK-A 63	XXX	XXX
31M 33 8115		HSK-A 100	XXX	XXX
31M 33 8118		PSC 63	(XXX)	–
31M 33 8121		Shank ∅ 25 mm	XXX	XXX
Length compensation by compression		mm	0.2	
Length compensation by tension		mm	1	
External ∅ D		mm	43	60
∅ D_1		mm	20	32
Dimension A (33 8100)		mm	53	90
Dimension A (33 8105)		mm	53	74
Dimension A (33 8106, 33 8118)		mm	57	–
Dimension A (33 8107)		mm	61	82
Dimension A (33 8110)		mm	64	97
Dimension A (33 8115)		mm	70	91
Dimension A (33 8121)		mm	34	56
suitable for ER size			11 / 16	25



Form AD
ISO 26623-1



33 8118



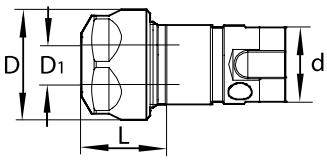
33 8121

Quick-change tapping collets and extensions (ER system!)

Suitable for: MLA quick-change tapping collets with minimum length adjustment No. 338100 – 338121.
Optional extras: ER tapping collets, see No. 309399 – 309447.

33 8120

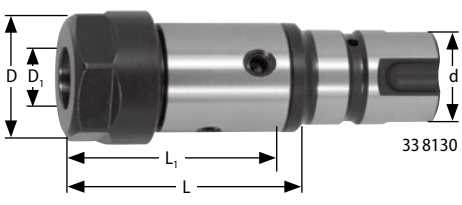
for ER collets		ER	11	16	25
31M 33 8120	Tapping collet for tapping head **MLA**		XXX	XXX	XXX
for cutting range			M1 – M5	M3 – M12	M6 – M20
L		mm	17	24	27
∅ D		mm	19	28	42
∅ D_1		mm	2 – 6	2 – 10	2 – 16
∅ d		mm	20	20	32
Spare high-speed nut GARANT No. 309610			11	16	25
maximum tightening torque		N·m	20	60	70



Extended quick-change tapping collets for synchronous tapping heads — MLA

Application: For tapping in places that are difficult to access.
Optional extras: ER tapping collets, see No. 309399 – 309447.

for ER collets		ER	16	25
31M 33 8130	Base extension **MLA**		XXX	XXX
for cutting range			M3 – M12	M6 – M20
L		mm	55	84
∅ D		mm	28	42
∅ D_1		mm	2 – 10	2 – 16
∅ d		mm	20	32
L_1		mm	38	63



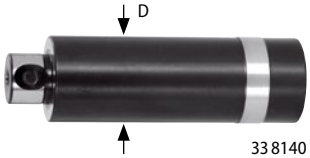
33 8130

Intermediate sections for basic extension MLA

Suitable for: Base extensions **MLA,** No. 338130.
33 8140 – Quick-change tapping chuck **ER16.**
33 8142 – Quick-change tapping chuck **ER25.**

Application: For extending the base extension for inaccessible places.

33 8140



33 8140

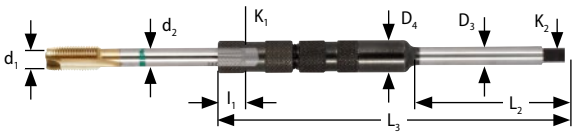
Length		mm	25	50	100	External ∅ D mm
31M 33 8140	Intermediate section MLA	M3 – 12	XXX	XXX	–	23
31M 33 8142		M6–20	–	(XXX)	(XXX)	35

HOLEX Tap extensions

- Long and extra long version.
- The **front end** of the extension acts as a collet. The collet is clamped to the tap by hand-tightening the knurled clamping nut.
- The drive torque is transmitted via the square drive.
- The **rear part** of the extension is to DIN, so that the extension can be mounted in quick-change tapping collets or ER tapping collets with a square drive.
  33 8420 – h6 shank with Weldon flat for use in Weldon/shrink-fit chucks or hydraulic chucks.
  33 8450 – With internal coolant supply

Application: For tapping in inaccessible places such as recesses, offsets, sharp edges on jigs, extremely deep internal threads or directly into casting walls.

33 8400



Type	32H 33 8400	32H 33 8420	32H 33 8450	for thread nominal ∅ d_1 DIN 371	for thread nominal ∅ d_1 DIN 374/376	for thread shank ∅ d_2	∅ D_3		∅ D_4	L_2		L_3
	Tap extension						33 8400 33 8450	33 8420	33 8400 33 8450	33 8400 33 8450	33 8420	
		with HB flat	with internal cooling			mm	mm	mm	mm	mm	mm	mm
1	XXX	XXX	XXX	M2 – M2.6	M4	2.8	6	6	6.1	60	60	130
1L	XXX	–	–	M2 – M2.6	M4	2.8	6	–	6.1	70	–	230
2	XXX	XXX	XXX	M3	M4.5 – M5	3.5	6	6	7.5	60	60	130
2L	XXX	–	–	M3	M4.5 – M5	3.5	6	–	7.5	70	–	230
3	XXX	XXX	XXX	M4	M6	4.5	6	6	8.4	60	60	130
3L	XXX	–	–	M4	M6	4.5	6	–	8.4	70	–	230
4	XXX	XXX	XXX	M4.5 – M6	M8	6	7	8	12.1	60	60	130
4L	XXX	XXX	XXX	M4.5 – M6	M8	6	7	8	12.1	70	70	230
5	XXX	XXX	XXX	M7	M9 – M10	7	7	8	12.1	60	60	130
5L	XXX	XXX	XXX	M7	M9 – M10	7	7	8	12.1	70	70	230
6	XXX	XXX	XXX	M8	M11	8	8	8	13	60	60	130
6L	XXX	XXX	XXX	M8	M11	8	8	8	13	80	80	230
7	XXX	XXX	XXX	M9	M12	9	9	10	15	60	60	130
7L	XXX	XXX	XXX	M9	M12	9	9	10	15	80	80	230
8	XXX	XXX	XXX	M10	–	10	10	10	15	60	60	130
8L	XXX	XXX	XXX	M10	–	10	10	10	15	80	80	230
9	XXX	XXX	XXX	–	M14	11	11	12	18	90	90	130
9L	XXX	XXX	XXX	–	M14	11	11	12	18	90	90	230
10	XXX	XXX	XXX	–	M16	12	12	12	18	90	90	130
10L	XXX	XXX	XXX	–	M16	12	12	12	18	90	90	230
11	XXX	XXX	XXX	–	M18	14	14	14	22	90	90	200
11L	XXX	XXX	XXX	–	M18	14	14	14	22	90	100	330
12	XXX	XXX	XXX	–	M20	16	16	16	22	90	90	200
12L	XXX	XXX	XXX	–	M20	16	16	16	22	90	100	330
13	XXX	XXX	XXX	–	M22 – M24	18	18	18	26	100	100	200
13L	XXX	XXX	XXX	–	M22 – M24	18	18	18	26	100	100	330

Arbor for tap extension

33 8462

33 8464

Through hardened and hard turned.

Suitable for:

Size 12 – Machine tap extension 338460 size 2-10.

Size 18 – Machine tap extension 338460 size 11-13

Advantage: Time-saving exchange of tap extensions with repetition accuracy and quick-change adapter.

Application: For direct adaption of the machine tap extension in the machine.

Ød	31M 33 8462	31M 33 8464	Dimension A		$Ø D_1$	$Ø D_2$
	Arbor for machine tap extension					
mm	SK 40	HSK-A 63	33 8462	33 8462	mm	mm
12	XXX	XXX	60	70	22	48
18	XXX	XXX	60	80	29	48

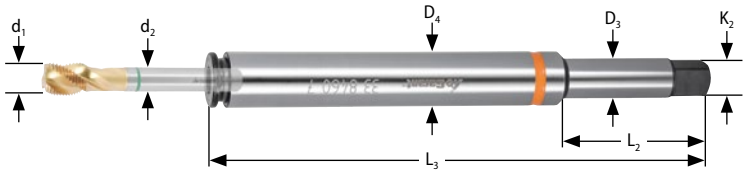
Tap extensions

- Long version.
- Torque transmission via the square shank.
- The **leading end** of the extension is fitted with a **quick-release chuck**.
- The **rear end** of the extension is to DIN, so that the extension can be mounted either in a quick-change tapping head or in an ER collet for taps with a square shank.

Suitable for: Arbor for machine tap extension No. 338462 or 338464, and conventional collet systems.

Advantage:
- Time-saving exchange of taps with repetition accuracy and quick-change adapter.
- Almost any combination of extensions available, due to the identical diameter D_3 and drive square K_2.

Application: For tapping in confined places, such as recesses, offsets, sharp edges on jigs, extremely deep internal threads, or directly into casting walls.

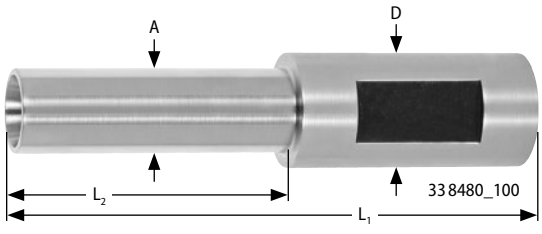


Type	31M 33 8460	for thread nominal Ø d_1 DIN 371	for thread nominal Ø d_1 DIN 374/376	for thread shank Ø d_2	$Ø D_3$	$Ø D_4$	K_2	L_2	L_3
	Tap extension with quick-release chuck			mm	mm	mm	mm	mm	mm
2	XXX	M 3	M 4.5 – M 5	3.5	12	12	9	45	145
3	XXX	M 4	M 6	4.5	12	12	9	45	145
4	XXX	M 4.5 – M 6	M 8	6	12	14	9	45	145
5	XXX	M 7	M 9 – M 10	7	12	16	9	45	145
6	XXX	M 8	M 11	8	12	16	9	45	145
7	XXX	M 9	M 12	9	12	18	9	45	145
8	XXX	M 10	–	10	12	18	9	45	145
9	XXX	–	M 14	11	12	20	9	45	145
10	XXX	–	M 16	12	12	20	9	45	145
11	XXX	–	M 18	14	18	24	14.5	49	149
12	XXX	–	M 20	16	18	26	14.5	49	149
13	XXX	–	M 22 – M 24	18	18	29	14.5	49	149

Drill extension

Application: For extending twist drills so as to pass by obstacles.

Optional extras: Collets No. 338490.



Length L1	32H 33 8480	Ø D	ØA	L_2
	Drill extension			
mm		mm	mm	mm
100	XXX	20	16	52
150	XXX	20	–	–

Collets for drill extension

Suitable for: Drill extensions No. 338480.

33 8490

Clamping Ø	mm	1,6	2	2,5	3	3,3	4	4,2	5	6	6,8	7	8
32H 33 8490	Collet 6314E	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX

Self-tightening drill chucks

High performance precision three-jaw drill chucks. High concentricity, keyless, self-tightening, high clamping force. Easily released by hand. Wearing parts hardened and exchangeable.

Size 15 – With vernier for pre-setting micro drills and for micro drill adapter No. 341200.

Standard: **DIN 238**

Application: For bench and pillar drilling machines, milling machines, lathes, for use with arbors No. 342300 – 342850 or directly on machine spindles.

34 1250

34 1000_15

34 1000 _30-160

34 1010

Type	31K 34 1250 Garant	33A 34 1000 ALBRECHT	39R 34 1010 RÖHM	Clamping range	External ∅	Drill head length open	Drill head length closed	Drill chuck taper	largest drill chuck taper ∅
	Self-tightening drill chuck	High-performance self-tightening drill chuck	Spiro	mm	mm	mm	mm		mm
15	–	XXX	–	0.2 – 1.5	19	35	37	B 6	6.35
30	–	XXX	–	0.2 – 3	24	44	47.5	B 10	10.094
65/10	–	XXX	XXX	0.5 – 6.5	34	61.5	68	B 10	10.094
65/12	–	XXX	XXX	0.5 – 6.5	34	61.5	68	B 12	12.056
100/12	–	XXX	XXX	0.5 – 10	43	80	91.5	B 12	12.056
100/16	–	XXX	XXX	0.5 – 10	43	80	91.5	B 16	15.733
130	XXX	XXX	XXX	1 – 13	50	90.5	103	B 16	15.733
160/16	XXX	XXX	XXX	3 – 16	56	95.5	109	B 16	15.733
160/18	XXX	XXX	XXX	3 – 16	56	95.5	109	B 18 stub	17.431

Self-tightening drill chuck with diamond-coated jaws

With **diamond-coated jaws,** self-tightening.

Standard: **DIN 238**

Application: Especially suitable **for clamping solid carbide drills** (Group 12) and for **drills with hard shanks.** For bench and pillar drilling machines, milling machines, lathes, for use with arbors No. 342300 – 342850 or directly on machine spindles.

Note: Use high precision straight shank drill chuck arbors No. 342600.

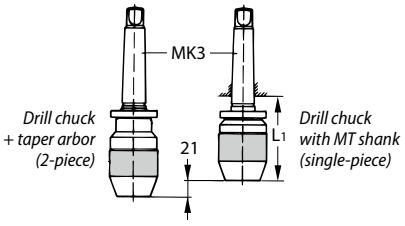
34 1050

Type	31K 34 1050 Garant	Clamping range	External ∅	Drill head length open	Drill head length closed	Drill chuck taper	largest drill chuck taper ∅
	Self-tightening drill chuck with diamond-coated jaws	mm	mm	mm	mm		mm
130	XXX	1 – 13	50	91	103	B 16	15.733

SBF-plus self-tightening high-performance drill chucks with MT shank (single-piece)

- Drill chuck and MT shank are a single unit.
- High concentricity, optimum stability.
- Easy and quick change due to short design, advantageous for confined working areas.

Note: The self-tightening effect works only for clockwise rotation.



34 1122

34 1115

MT shank		2	3	4
33A 34 1115 ALBRECHT	Self-tightening high-performance drill chuck with MT shank	XXX	–	–
31K 34 1122 Garant		XXX	XXX	XXX
33A 34 1120 ALBRECHT		XXX	XXX	XXX
33A 34 1125 ALBRECHT		XXX	XXX	XXX
Clamping range (34 1115)	mm	0.5 – 6.5	–	–
Clamping range (34 1122, 34 1120)	mm	1 – 13		
Clamping range (34 1125)	mm	3 – 16		
External ∅ (34 1115)	mm	34	–	–
External ∅ (34 1122, 34 1120)	mm	50		
External ∅ (34 1125)	mm	56		
L_1 open (34 1115)	mm	66	–	–
L_1 open (34 1122, 34 1120)	mm	85	85	86.5
L_1 open (34 1125)	mm	89	89	90
L_1 closed (34 1115)	mm	71	–	–
L_1 closed (34 1122, 34 1120)	mm	97.5	97.5	99
L_1 closed (34 1125)	mm	102.5	102.5	103.5

Spare jaws

Suitable for:

34 1150 – Drill chucks No. 341000, 341250, 341120, 341122, 341125.
34 1160 – Drill chuck No. 341050.

34 1150 / 1160

for drill chuck size		100	130	160
33A 34 1150	Jaws set, 3 pieces **Standard**	XXX	XXX	XXX
33A 34 1160	Jaws set, 3 pieces **diamond coated**	–	XXX	–
Length mm		26.5	29	30

≤20µm | G 6.3 15000 min^{-1} | ≤50 bar

Key-operated drill chucks with plain shank

- For right hand and left hand operation.
- Slim design.
- Targeted delivery of coolant.

Advantage:
- Very flexible applications due to the straight shank.
- Optimum holding torques at the tool.

Supplied with: Torx chuck key with T-handle.

34 1265

Type	31B 34 1265 Drill chuck with straight shank	Clamping range mm	External ∅ mm	Drill head length open mm	Drill head length closed mm	Overall length mm	Shaft length mm
25	XXX	1 – 16	50	81.9	92	137.9	56
32	XXX	1 – 16	50	81.9	92	141.9	60

Self-tightening drill chucks – standard version

With drill chuck taper DIN 238

34 1425 – Simple, lightweight design.
34 1455 – **With clamping force protection (SKS)** for impact drills.
For clockwise and anticlockwise rotation.

Application: For fitting to arbors No. 342300 - 342887 or directly on to the machine spindle.
34 1425 – Mainly for portable drills.
34 1400/1420 – For use on bench drills.

Drill chuck taper

34 1400

34 1425

Type	39R 34 1400 ROHM	32W 34 1425 HOLEX	39R 34 1455 ROHM	Clamping range mm	External ∅ 34 1400 mm	External ∅ 34 1425 mm	External ∅ 34 1455 mm	Drill head length closed 34 1400 mm	Drill head length closed 34 1425 mm	Drill head length closed 34 1455 mm	Drill chuck taper	largest drill chuck taper ∅ mm
	Self-tightening drill chuck Supra		Supra with SKS									
6	XXX	–	–	0 – 6.5	32	–	–	65.6	–	–	B 10	10.094
8	XXX	–	–	0 – 8	35.8	–	–	73.4	–	–	B 12	12.065
10/12	XXX	XXX	XXX	0 – 10	40.2	34.3	40.2	86.1	79.4	86.1	B 12	12.065
10/16	XXX	XXX	–	0 – 10	40.2	43	–	89.1	92	–	B 16	15.733
13/12	XXX	XXX	XXX	1 – 13	42.5	42.5	42.5	90	97	90	B 12	12.065
13/16	XXX	XXX	XXX	1 – 13	46	42.5	42.8	101.5	101.6	89.3	B 16	15.733
16/16	XXX	XXX	–	3 – 16	51	50.5	–	107	106.7	–	B 16	15.733
16/18	XXX	XXX	–	3 – 16	51	50.5	–	107	110.9	–	B 18	17.431

Type	31U 34 1420 Garant Self-tightening drill chuck	Clamping range mm	External ∅ mm	Drill head length closed mm	Drill chuck taper	largest drill chuck taper ∅ mm
6	XXX	0 – 8	37	78	B 10	10.094
8	XXX	0 – 8	37	78	B12	12.065
10/12	XXX	0 – 10	40	86	B 12	12.065
10/16	XXX	0 – 10	40	86	B 16	15.733
13/12	XXX	1 – 13	47	103	B 12	12.065
13/16	XXX	1 – 13	47	103	B 16	15.733
16/16	XXX	3 – 16	52	105	B 16	15.733
16/18	XXX	3 – 16	52	105	B 18	17.403

34 1420

With internal thread

Size 10-1/2–13-1/2 – **With clamping force protection** for impact drills.

Application: For use on bench drills.
For fitting to electric drilling machines.

Internal thread

34 1610

34 1615

Type	39R 34 1610 RÖHM	32W 34 1615 HOLEX	Clamping range		External ∅		Drill head length open		Drill head length closed		Adapter
	Self-tightening drill chuck										
	Supra		34 1610 mm	34 1615 mm	34 1610 mm	34 1615 mm	34 1610 mm	34 1615 mm	34 1610 mm	34 1615 mm	inch
10-3/8	XXX	XXX	0.5 – 10	0.5 – 10	40	39	66	71	73.7	83	3/8-24
10-1/2	–	XXX	–	0.5 – 10	–	39	–	71	–	83	1/2-20
13-3/8	XXX	XXX	1 – 13	2 – 13	40.2	43	76.3	79	83.6	90	3/8-24
13-1/2	XXX	XXX	1 – 13	2 – 13	42.8	43	76	79	83.3	90	1/2-20
16-5/8	XXX	–	3 – 16	–	46	–	87.5	–	97.5	–	5/8-16

ALBRECHT Präzisions Spannfutter — Chuck removal tool for drill chucks

Application: Special tool for the removal of drill chucks from tapered arbors.

Type	33A 34 1140	suitable for drill chuck taper	Length	Width	Thickness
	Chuck removal tool for drill chucks		mm	mm	mm
1	XXX	B 6	120	20	10
2	XXX	B 10; B 12	170	30	10
3	XXX	B 16; B 18	210	40	12

Keyless drill chucks

- **Keyless drill chuck** with self-tightening keyless locking mechanism.
  No additional locking required (not even for impact drilling).
- Very ergonomic, easy to use, hexagon flats for wrench assistance.
- Good concentricity.
- **Through hole version for right-hand and left-hand operation**(thread M5 or M6).

34 2204 – Single-piece drill chuck; the drill chuck can be opened with one hand when the spindle of the drilling machine is stopped. Extremely short design.

34 2207 – Special clamping chamfer for wear reduction.

34 2200–2205 – Equipped with start inhibit.

34 2200/2205 Size 13-1/2; 13-3/8 – **Chamfers made of carbide** for wear reduction.

34 2200

34 2205

34 2204

34 2207

Type	39R 34 2200	39R 34 2204 RÖHM	39R 34 2205	Clamping range	External ∅		Drill head length open		Drill head length closed		Adapter	maximum machine power	
	Drill chuck with keyless locking mechanism Extra RV				34 2200 34 2205	34 2204	34 2200 34 2205	34 2204	34 2200 34 2205	34 2204		34 2200	34 2204 34 2205
	Plastic version	Metal version	Metal version	mm	mm	mm	mm	mm	mm	mm	inch	W	W
10-3/8	XXX	–	–	1 – 10	42.7	–	55	–	60.9	–	3/8-24	550	–
10-1/2	XXX	–	–	1 – 10	42.7	–	55	–	60.9	–	1/2-20	1000	–
13-3/8	XXX	–	–	1.5 – 13	42.7	–	64.5	–	72.4	–	3/8-24	1000	–
13-1/2	XXX	XXX	XXX	1.5 – 13	42.7	42.4	64.5	51	72.4	60.9	1/2-20	1000	1100
13-9/16	–	XXX	–	1.5 – 13	–	42.4	–	51	–	60.9	9/16-20	–	1100

Type	32W 34 2207 HOLEX	Clamping range	External ∅	Drill head length open	Drill head length closed	Adapter	maximum machine power
	Drill chuck with keyless locking						
	Metal version	mm	mm	mm	mm	inch	W
13-3/8	XXX	1.5 – 13	43.1	63	74	3/8-24	1100
13-1/2	XXX	1.5 – 13	43.1	63	74	1/2-20	1100

Self-tightening drill chuck for hand power drills

- Automatic tightening whilst drilling, proportional to the cutting force (maintains the clamping force even under tough conditions!).
- Sturdy design (functional components of metal).
- **With retaining ring.**
- With clamping force protection(clamping and locking using only one hand!).

Application:
- For heavy-duty cordless and mains power drills.
- Cordless impact power drills up to 36 Volt.
- Reverse torque up to 50 Nm.

Note:
- **No through holes** – Drill chucks thus have to be secured tightly to the spindle.
- **General purpose** – with retaining ring for use on machines with / without spindle stops.

Type	39R 34 1710	Clamping range	External ∅	Drill head length open	Drill head length closed	Adapter
	Self-tightening drill chuck					
	Supra-SK 13E	mm	mm	mm	mm	inch
13-1/2	XXX	1.5 – 13	42.9	72	79.3	1/2-20

Gear rim drill chuck with key

Application: For universal drilling on portable electric drills, **hammer drills** and pillar drills.

With drill chuck taper DIN 238

For clockwise and anticlockwise rotation.
With drill chuck taper DIN 238 for fitting to arbors No. 342300 - 342850 or directly on to the machine spindle.

34 2215 – Jaws are hardened.
34 2220 – Key guide not hardened.

Drill chuck taper

34 2215

34 2220

Type	39R 34 2215	32W 34 2220	Clamping range		External ∅		Drill head length closed		Drill chuck taper	largest drill chuck taper ∅	suitable gear rim socket
	Gear rim chuck										
	Prima		34 2215 mm	34 2220 mm	34 2215 mm	34 2220 mm	34 2215 mm	34 2220 mm		mm	
6/10	XXX	–	0.5 – 6.5	–	29.5	–	52.5	–	B 10	10.094	S1
6/12	XXX	–	0.5 – 6.5	–	29.5	–	57.5	–	B 12	12.065	S1
8	XXX	–	0.5 – 8	–	29.5	–	57.5	–	B 12	12.065	S2
10/12	XXX	XXX	0.8 – 10	0.8 – 10	34.5	33.5	60.5	61.4	B 12	12.065	S2
10/16	XXX	XXX	1 – 10	1 – 10	42.8	42.4	77	77	B 16	15.733	S2
13	XXX	XXX	1.5 – 13	1.5 – 13	42.8	42.4	77	77	B 16	15.733	S2
16/16	XXX	XXX	3 – 16	3 – 16	50	50	86.5	86.5	B 16	15.733	S3
16/18	XXX	XXX	1 – 16	3 – 16	56.5	50	98	98	B 18	17.78	S3

With internal thread

For clockwise rotation.

34 2225 – Jaws are hardened.
34 2235 – Key guide not hardened.

Size 10-3/8–13-1/2 – **Chuck secured with a screw** (left-hand thread), therefore suitable for clockwise and anticlockwise rotation.

Internal thread

34 2225

34 2235

Type	39R 34 2225	32W 34 2235	Clamping range	External ∅		Drill head length closed	Adapter	suitable gear rim socket
	Gear rim chuck							
	Prima		mm	34 2225 mm	34 2235 mm	mm	inch	
8-3/8	XXX	–	0.5 – 8	29.5	–	53	3/8-24	S1
10-3/8	XXX	XXX	0.8 – 10	34.5	33.3	61	3/8-24	S2
10-1/2	XXX	XXX	0.8 – 10	34.5	33.3	61	1/2-20	S2
13-1/2	XXX	XXX	1.5 – 13	42.4	42.4	74	1/2-20	S2
13-3/8	XXX	–	1.5 – 13	42.8	–	74	3/8-24	S2
16-5/8	XXX	–	1.5 – 16	56.5	–	100.5	5/8-16	S3

HOLEX Accessories for drill chucks

Replacement key

Type	32W 34 2245	Pin ∅
	Spare chuck key for gear rim chuck	mm
S1	XXX	4
S2	XXX	6
S3	XXX	8

34 2245

Adapter for drill chuck with internal thread 1/2 inch/ 20 tpi

Adapter with SDS-Plus shank to 1/2 inch / 20 tpi.

34 2150

32X 34 2150	Adapter with shank SDS-Plus to 1/2 inch 20 tpi	XXX

ALBRECHT Präzisions Spannfutter Micro drill adapters

Precision operation due to ball-bearing retaining ring.
Automatic return to initial position by spring retraction.

Suitable for: No. 341000 size 15.

Application: For holes up to ∅ 1.5mm.
To produce very small holes by manual feed, even on large machines.

34 1200

Type	33A 34 1200	Shank type	Drill stroke	Overall length	Taper size
	Micro drill adapter		mm	mm	
13	XXX	13 mm ∅	20	91	B 6
MK1	XXX	MK 1	20	107	B 6

Morse taper drill chuck arbors

With MT shank and tang.

34 2500 – Precise economy version.

34 2600 – The **high precision version** offers maximum concentricity and is recommended for self-tightening high-performance drill chucks No. 341000.

Application: For mounting drill chucks on drills, lathes, jig borers etc.

34 2500

MT / drill chuck taper	32X 34 2500 HOLEX Tapered arbor with MT shank	33A 34 2600 MT tapered arbor, precision version	Drill chuck taper DIN 238	Taper ∅ D mm
0/6	–	XXX	B 6	6.35
0/10	–	XXX	B 10	10.094
1/10	XXX	XXX	B 10	10.094
1/12	XXX	XXX	B 12	12.065
1/16	XXX	XXX	B 16	15.733
1/18	XXX	XXX	B 18	17.78
2/10	XXX	XXX	B 10	10.094
2/12	XXX	XXX	B 12	12.065
2/16	XXX	XXX	B 16	15.733
2/18	XXX	XXX	B 18	17.78
2/22	XXX	XXX	B 22	21.793

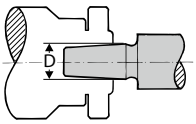
MT / drill chuck taper	32X 34 2500 HOLEX Tapered arbor with MT shank	33A 34 2600 MT tapered arbor, precision version	Drill chuck taper DIN 238	Taper ∅ D mm
3/16	XXX	XXX	B 16	15.733
3/18	XXX	XXX	B 18	17.78
3/22	XXX	XXX	B 22	21.793
3/24	–	XXX	B 24	23.825
4/16	XXX	XXX	B 16	15.733
4/18	XXX	XXX	B 18	17.78
4/22	–	XXX	B 22	21.793
4/24	–	XXX	B 24	23.825
5/18	–	XXX	B 18	17.78
5/22	–	XXX	B 22	21.793

HOLEX Straight shank arbors for drill chucks

Through hardened and ground. High long-term concentricity because swarf cannot be pressed into the hardened surface and no notches can occur from minor impacts.

Standard: Drill chuck taper **DIN 238.**

34 2300



Straight shank drill chuck arbors

High precision version with plain shank.

Application: For mounting drill chucks on to milling machines, automatic system etc. The plain shank can be clamped in a **collet or in a milling chuck**.

Shank ∅ / drill chuck taper	32X 34 2300 Straight shank drill chuck arbor	Drill chuck taper DIN 238	Taper ∅ D mm	Plain shank length mm
6/6	XXX	B 6	6.35	35
8/10	XXX	B 10	10.094	35
10/10	XXX	B 10	10.094	40

Shank ∅ / drill chuck taper	32X 34 2300 Straight shank drill chuck arbor	Drill chuck taper DIN 238	Taper ∅ D mm	Plain shank length mm
10/12	XXX	B 12	12.065	40
16/16	XXX	B 16	15.733	50

Straight shank arbors with MT shank and internal locking thread

High precision version with MT shank and internal locking thread.

Application: For mounting drill chucks on milling machines with Morse tapers.

34 2700

MT / drill chuck taper	32X 34 2700 Morse taper arbor with locking thread	Drill chuck taper DIN 238	Taper ∅ D mm	Internal pull thread
2/12	XXX	B 12	12.065	M10
2/16	XXX	B 16	15.733	M10
3/16	XXX	B 16	15.733	M12

Straight shank arbor with ISO taper shank and locking thread

High precision version with DIN taper shank and locking thread.

34 2887 – **Short taper to DIN 69871 A, Part 1** with tool changer flange and thread for pull stud.

Application: For mounting drill chucks on milling machines with DIN 2080 short tapers.

Size 40/16 – With internal locking thread M16 **and snap ring groove** for **automatic clamping** (e.g. Maho, Deckel, Mikron etc., also suitable for all standard machines **with manual clamping).**

34 2886_40/16
Size 40/16 with snap ring groove

34 2887_50/16

SK / drill chuck taper	32A 34 2886 Short taper drill chuck arbor	32A 34 2887 Short taper drill chuck arbor	Drill chuck taper DIN 238	Taper ∅ D mm	Internal pull thread	Colour code for suitable shank
40/16	XXX	XXX	B 16	15.733	M16	
50/16	–	XXX	B 16	15.733	M24	

HOLEX Morse taper reducing sleeves

Through hardened, internal and external tapers ground.

Standard: **DIN 2185**

34 3000

MT external / internal		1/0	2/1	3/1	3/2	4/1	4/2	4/3	5/1	5/2	5/3	5/4	6/3	6/4	6/5
32X 34 3000	MT reducing adapter	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
Overall length	mm	80	92	99	112	124	124	140	156	156	156	171	218	218	218

HOLEX Long Morse taper sleeves

External taper ground.

34 3510 – **Extension sleeve** (with identical external and internal taper).

34 3520 – **Extended reducing sleeve** (internal taper smaller than external taper).

34 3530 – **Extension sleeve** (internal taper larger than external taper).

Standard: Similar to **DIN 2187.**

34 3510

MT external / internal	32X 34 3510 MT extension sleeve	32X 34 3520 MT extended reducing sleeve	32X 34 3530 MT expansion sleeve	Overall length mm
2/1	–	XXX	–	160
3/1	–	XXX	–	175
3/2	–	XXX	–	194
4/1	–	XXX	–	200
4/2	–	XXX	–	215
4/3	–	XXX	–	240
5/3	–	XXX	–	268
5/4	–	XXX	–	300
1/1	XXX	–	–	145

MT external / internal	32X 34 3510 MT extension sleeve	32X 34 3520 MT extended reducing sleeve	32X 34 3530 MT expansion sleeve	Overall length mm
2/2	XXX	–	–	175
3/3	XXX	–	–	215
4/4	XXX	–	–	265
5/5	XXX	–	–	335
1/2	–	–	XXX	160
2/3	–	–	XXX	196
3/4	–	–	XXX	240
4/5	–	–	XXX	300

Colour code: SK 40 SK 50

Drill drifts for Morse taper tools with tang

Standard: **DIN 317**

Application: For Morse taper tools to DIN 228 with tang.

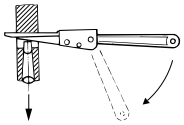
Type		0	1	3	4	5
35A **34 3800**	Drill drift	XXX	XXX	XXX	XXX	XXX
for MT		0	1; 2	3	4	5; 6
Overall length	mm	90	140	190	225	265

Semi-automatic drill drift

- One-handed operation without impact tools (avoids damage to spindle).
- Tools are released by a wedge effect.

Application: For Morse taper tools to DIN 228 with tang.

Type	35A **34 3850** Semi-automatic drill drift	for MT	Overall length mm
1-3	XXX	1 – 3	317
4-6	XXX	4 – 6	380



Taper wipers and parallel wipers

- Wide spacing for collecting swarf and dirt.
- Fleece is resistant to oil and emulsions.

Advantage:

34 3700–3705/3720–3740 – **Plastic version** non-warping, for high precision use. Fleece strips with additional grooves.

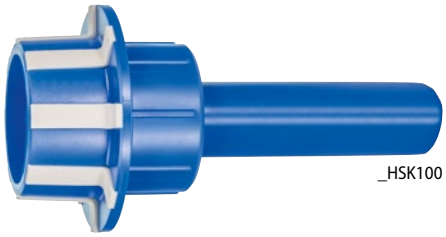
Application: For cleaning internal tapers / external tapers / internal bores on machine spindles, sleeves, and tool arbors (e.g. shrink-fit chucks / hydraulic chucks).

34 3705

New improved version!

34 3700

_SK40

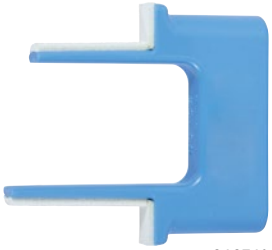


_HSK100

34 3720_6–14
For parallel bores

34 3720_16–32
For parallel bores

34 3730
For ER collet chucks



34 3740

for mounting type	37E **34 3700** Taper wiper **Plastic**	37E **34 3705** External wiper **Plastic**	37E **34 3710** Taper wiper **Wood**
MK1	XXX	–	XXX
MK2	XXX	–	XXX
MK3	XXX	–	XXX
MK4	XXX	–	XXX
MK5	XXX	–	XXX
SK30	XXX	–	XXX
SK40	XXX	–	XXX
SK45	XXX	–	–
SK50	XXX	–	XXX
HSK32	XXX	–	–
HSK40	XXX	XXX	–
HSK50	XXX	XXX	–
HSK63	XXX	XXX	–
HSK80	XXX	XXX	–
HSK100	XXX	XXX	–

Pin ∅ mm	37E **34 3720** Parallel wiper **Plastic**
6	XXX
8	XXX
10	XXX
12	XXX
14	XXX
16	XXX
18	XXX
20	XXX
25	XXX
32	XXX

for arbor type	37E **34 3730** Taper wiper for ER, **Plastic**
ER11	XXX
ER16	XXX
ER20	XXX
ER25	XXX
ER32	XXX

for arbor type	37E **34 3740** Polygon wiper for PSC **Plastic**
C3	(XXX)
C4	(XXX)
C5	(XXX)
C6	XXX
C8	(XXX)

Morse taper clamping sleeve

Through hardened, bore and external taper ground.

Standard: **DIN 6328**

Application data: For fitting into adjustable adapters angle heads, quick-change tapping collets, and multi-spindle machines where the spindles are close together.

Application: For mounting parallel shank taps and reamers with square drive.

Note: Not suitable for milling work!

Tool with parallel shank and square.

34 5000

Morse taper clamping sleeve

MT/∅	37E 34 5000 Morse taper clamping sleeve for taps	for shank ∅ mm	for shank □ mm
1/3,5	XXX	3.5	2.7
1/4	XXX	4	3
1/4,5	XXX	4.5	3.4
1/5	XXX	5	3.8
1/5,5	XXX	5.5	4.3
1/6	XXX	6	4.9
1/7	XXX	7	5.5
1/8	XXX	8	6.2
2/5,5	XXX	5.5	4.3
2/6	XXX	6	4.9
2/7	XXX	7	5.5
2/8	XXX	8	6.2
2/9	XXX	9	7
2/10	XXX	10	8
2/11	XXX	11	9

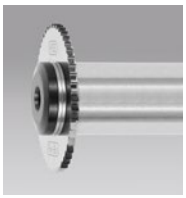
MT/∅	37E 34 5000 Morse taper clamping sleeve for taps	for shank ∅ mm	for shank □ mm
2/12	XXX	12	9
3/8	XXX	8	6.2
3/9	XXX	9	7
3/10	XXX	10	8
3/11	XXX	11	9
3/12	XXX	12	9
3/14	XXX	14	11
3/16	XXX	16	12
4/12	XXX	12	9
4/14	XXX	14	11
4/16	XXX	16	12
4/18	XXX	18	14.5
4/20	XXX	20	16
4/22	XXX	22	18
4/25	XXX	25	20

Slitting saw arbors

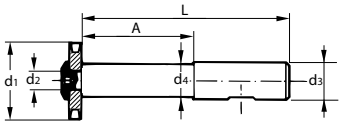
Precisely tempered, ground on the external and internal ∅, shank to DIN 1835 B. Concentricity 0.01 mm. **For side lock arbor with bore ∅ (d_3) 20 or 25 mm.**

Application: For holding slitting saws No. 175000 – 179820 with ∅ (d_1) from 20 – 100 mm and saw blade thicknesses from 0.2 – 6 mm.

Supplied with: Arbor, clamping screw and intermediate ring.



34 5510



for saw blade ∅ d_1	mm	20	25	32	40	50	63	80	100
32X 34 5510 HOLEX Slitting saw arbor		XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
A	mm	40	50	55	60	78	78	92	92
L	mm	90	100	105	110	136	136	150	150
∅ d_2	mm	5	8	8	10	13	16	22	22
∅ d_3	mm	20	20	20	20	25	25	25	25
∅ d_4	mm	10	13	16	19.5	24.5	24.5	34	39.5

Set of slitting saw arbors

Supplied with: No. 345510 size 20 – 63, including a wooden case.

34 5555

32X 34 5555	HOLEX Set of slitting saw arbors	XXX

Spare parts for slitting saw arbors

34 5561

34 5566

for saw blade ∅ d_1	mm	20	25	32	40	50	63	80	100
32X 34 5561	Spare washer for slitting saw arbor	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
32X 34 5566	Spare screw for slitting saw arbor	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX

Garant Shrink-fit and cooling unit

- Unique design.
- Modular
- Easy to use.
- Everything in its right place.

Ergonomic handle

High-power coil
- Shrink range ∅ 3 – 32 mm (carbide + HSS)
- Roller spring supported coil guide
- QTH = QuickToolHolder (integrated tool tray)

Shrink-fit tool length
up to 500 mm

Basic tool holders
No. 35 4225 – 35 4227

Including air cooling
at the shrink-fit chuck position

Modular design
- Shrink-fit station including air cooling No. 35 4210_SU1
- Cooling unit including cooling air supply No. 35 4215_CU1

Perforated panel
for using GARANT Easyfix systems No. 96 3001 – 96 3058.

Contact cooling
- Positively driven
- Contour-dependent

Storage for the cooling inserts

Tool storage

Stainless steel surface

Storage for screening plates
∅ 3 – 32 mm (no. 35 4240)

Garant Shrink-fit and cooling unit

Shrink-fit unit SU1

Shrink-fit unit with integral cooling at the shrink-fit chuck position.
Maximum shrink-fit tool length 500 mm.
Storage for screening plates.

Application:
- **For contour-dependent cooling.**
- For shrinking shanks of carbide and HSS in and out.
- Shrink range 3 – 32 mm.

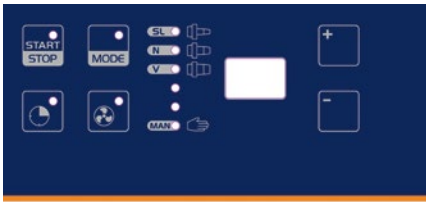
Supplied with:
- 4 screening plates ∅ 3 – 32 mm No. 354240.
- Clamping ring.
- 1 pair heat-resistant gloves.

Optional extras:
- Suitable sub-frame No. 354290.
- Spare screening plates No. 354240.
- Tool mountings No. 354225 – 354227.
- Cooling adapter for air cooling No. 354235 – 354236.
- Cooling unit No. 354215 CU1.

35 4210

Type		SU1
31E 35 4210	Shrink-fit unit	XXX
Width	mm	700
Height	mm	986
Depth	mm	533
Power supply		3-AC 400 V/50 Hz + N + PE 230 V/50 – 60 Hz
Power	kW	11
Weight	kg	45

Very easy to use.
Automatic selection of the shrinking parameters.



Cooling unit CU1 with active cooler

- Storage for cooling inserts.
- Stand-alone variant.
- 2 × positively driven contact cooler (no damage to the tool).

Application:
- **For contour-dependent cooling.**

Supplied with:
- Includes active cooler.
- 5 cooling inserts ∅ 6 – 32 mm No. 354260.

Optional extras:
- Suitable sub-frame No. 354290.
- Cooling inserts No. 354260 – No. 354279 in the spare parts list.

Note: 1.4 litres ethylene glycol (such as Glysantin G48) are required for operation of the active cooler.

35 4215

Type		CU1
31E 35 4215	Cooling unit	XXX
Width	mm	430
Height	mm	902
Depth	mm	533
Weight	kg	39
Active cooler width	mm	413
Active cooler height	mm	415
Active cooler depth	mm	283
Active cooler power	kW	0.47
Active cooler weight	kg	22
Active cooler power supply		230 V / 50 – 60 Hz

Accessories for GARANT shrink-fit unit SU1 / cooling unit CU1

Screening plates

Suitable for: Shrink-fit unit No. 354210 SU1.

Note: For slim shrink-fit chuck screening plate No. 354241.

for clamping ∅	mm	3-5	6-12	12-20	20-32
31E 35 4240	Garant Screening plate for coil **SU1**	XXX	XXX	XXX	XXX

35 4240_12-20

35 4240_3-5

Basic tool mountings

Suitable for: Shrink-fit unit No. 354210 SU1 and cooling unit No. 354215 CU1.

for taper shank	SK	30	40	50
31E 35 4225	Garant Basic tool mounting **for SK**	XXX	XXX	XXX

35 4225

for taper shank	HSK	32	40	50	63	80	100
31E 35 4226	Garant Basic tool mounting **for HSK**	XXX	XXX	XXX	XXX	XXX	XXX

for taper shank	PSC	30	40	50	63
31E 35 4227	Garant Basic tool mounting **for PSC**	(XXX)	(XXX)	(XXX)	(XXX)

4.5° cooling adapter for air cooling

- Precise enclosure of the clamping profile of the tool.
- Quick cooling of the heated shrink-fit chuck.
  35 4235 – For shrink-fit chucks with engagement lengths up to 120 mm.
  35 4236 – For shrink-fit chucks with engagement lengths 120 – 200 mm.

Note: For mounting on tool mounting No. 354225 – 354227.

35 4225

35 4235

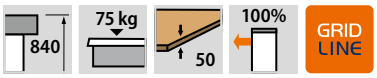
for clamping ∅	mm	3-5,9	6-9	9,1-12	12,1-16	16,1-22	22,1-32
31E 35 4235	Garant Cooling adapter short **4.5°**	XXX	XXX	XXX	XXX	XXX	XXX

for clamping ∅	mm	3-5,9	6-9	9,1-12	12,1-16	16,1-22	22,1-32
31E 35 4236	Garant Cooling adapter long **4.5°**	XXX	XXX	XXX	(XXX)	XXX	XXX

Base cabinet for SU1 and CU1

- Body with 3 drawers and one cupboard in RAL 7035 light grey and drawers RAL 7016 anthracite grey. (Storage space for the active cooler of the CU1 cooling unit).
- Body of welded sheet steel, with bench top of Beolin, edges veneered with 3 mm thick graphite.

Note: No complaints will be accepted for changes in colour due to exposure to sun and light.



35 4291

Width	mm	1500
31E 35 4291	GRIDLINE Base cabinet for shrink-fit unit	XXX
Height	mm	840
Width	mm	1500
Depth	mm	700

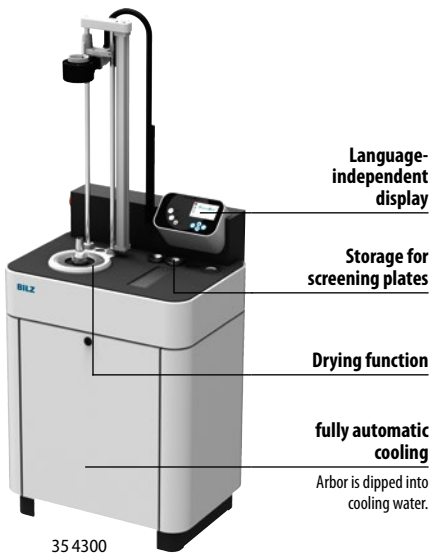
Shrink-fit unit

Fully automatic shrink fitting process. Integral water cooling. Drying feature for optimum drying. Graphical display. Maximum shrink-fit tool length 400 mm.

Application:
- For contour-independent cooling in only 20 seconds.
- For shrinking shanks of carbide and HSS in and out.
- Shrink range ∅ 3 – 32 mm.

Supplied with: 4 screening plates ∅ 3 – 32 mm. 1 pair safety gloves. 1 litre coolant concentrate.

Note: Tool mountings available on request.



35 4300

Type		WK
35B 35 4300	Shrink-fit unit ISG-3410	(XXX)
Width	mm	800
Height	mm	560
Depth	mm	1720
Power supply		400V / 16A / 50Hz
Power	kW	11
Compressed air	bar	4
Tank capacity	l	50

Shrink-fit unit and accessories

Easy to use. Small, light-weight shrink-fit unit, can be used anywhere. Maximum shrink-fit tool length 290 mm. Shrink range ∅ 3 – 16 mm.

Supplied with: 1 screening plate 6 - 16 mm and 1 pair safety gloves.

Optional extras: Screening plates No. 354440, tool mounting No. 354225 – 354227.

35 4400

35B	**35 4400**	Shrink-fit unit ISG-1000	XXX
	Width	mm	310
	Height	mm	640
	Depth	mm	390
	Power supply		3×400V / 16A
	Power	kW	6.5

Suitable for: Shrink-fit unit No. 354400.

	for clamping ∅	mm	3-6	6-16
35B	**35 4440**	Screening plate for ISG-1000	XXX	XXX

35 4440

Length setting gauge (manual pre-setting)

Tools are set to length from 20 - 125 mm and are held in the jaws by a clamping spring - no force needs to be applied.

Suitable for: All popular parallel tools from ∅ 3 - 20 mm.

Advantage: Pre-setting of tool free lengths up to 125 mm, saves time due to ease of operation, tools do not "drop through" e.g. for shrink-fit arbors, high stability, high degree of safety.

Application: Tools can be pre-set to 0.5 mm accuracy, suitable for all tool arbors (such as shrink-fit arbors, ER collets, Weldon arbors etc.).

32Z	**35 8400**	Length setting gauge	XXX

VG1 pre-setting device

Technical data:
- Spindle run-out 2 µm.
- Camera 24 times magnification.
- Display resolution 1 µm.
- Windows 10 operating system.
- Multiple USB ports.

Advantages:
- Intelligent and user-friendly.
- Intuitive operation:
  – Clearly structured interface.
  – Major functions accessible easily and directly.
  – Self-explanatory symbols.
- Major foreign languages integrated.

CMOS digital camera
- Fast live image with 30 images per second.
- Telecentric lens for accurate images of the tool on the camera chip.

One-handed operation
- With electromagnetic quick adjustment.
- Axes activated simultaneously or individually.

Unlimited fine adjustment
- In X and Z axis.

Coordinate display on the 15" touch screen
- Incremental measuring.
- Axes measured separately.

Spindle with calibration

Indexing 4×90°

Lockable

Measurement functions

Fixed cross hair | *Floating cross-hairs* | *Focussing on a cutting edge* | *Total image* | *Horizontal cross-section* | *Vertical cross-section* | *Theoretical tip* | *Intersection* | *Radius function* | *Angle function* | *Distance* | *Search beam measurement, horizontal* | *Search beam measurement, vertical* | *Radius template* | *Angle template*

Pre-setting device VG1 – simple, quick, precise

- 15 inch touch screen, intuitive and simple operation via symbols.
- Calibration facility incorporated into the base mounting.
- Storage facilities.
- Quick adjustment of both axes (X / Z) separately or together.
- Fine adjustment of both axes (X / Z).
- Spindle with 4×90° indexing and spindle brake.

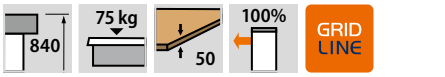
Application: For measuring and pre-setting tools at the machine or manufacturing cell.

Supplied with: Calibration device on the tool mounting, keyboard, storage plates, cutting edge cleaner, and measurement software in the major foreign languages.

Optional extras:
- Sub-frame cupboard No. 354767.
- Reducers No. 354771/ 4773 / 4775 / 4777 / 4779.
- Label printer No. 085505 size LW450 (DYMO).
- Labels No. 085565.

35 4760

Type		VG1
31E 35 4760	Garant Pre-setting device, with 15 inch touch screen	(XXX)
Base toolholder		SK50
Quick adjustment		electromagnetic
Measurement process		Image processing 15 inch touch screen
Measurement control		PC measurement electronics
Measuring range X	mm	400
Measuring range Z	mm	500
Width base	mm	860
Overall width	mm	1500
Depth	mm	590
Height	mm	1060
Weight	kg	150
Spindle load	kg	100



Accessories for VG1

35 4767 – Body of welded sheet steel, with bench top of Beolin, edges veneered with 3 mm thick graphite. Incorporating the GARANT locking system

Colour:

35 4767 – Body light grey RAL 7035, drawers anthracite grey RAL 7016.

Note:

35 4767 – No complaints will be accepted for changes in colour due to exposure to sun and light.

35 4767

Width	mm	1500
31E 35 4767	GRIDLINE Base cabinet for the VG1 pre-setting device	XXX
Height	mm	840
Depth	mm	700

35 4771_50/40 35 4773_50/V25

SK basic tool mounting / reducer SK		50/30	50/40
31E 35 4771	Garant Reducer SK50 / SK	XXX	XXX

SK basic tool mounting / reducer VDI		50/V16	50/V20	50/V25	50/V30	50/V40	50/V50
31E 35 4773	Garant Reducer SK50 / VDI	XXX	XXX	XXX	XXX	XXX	XXX

35 4775_50/H63 35 4777_50/C63 35 4779_50/H63DI

SK basic tool mounting / reducer HSK		50/H40	50/H50	50/H63	50/H100
31E 35 4775	Garant Reducer SK50 / HSK	XXX	XXX	XXX	XXX

SK basic tool mounting / reducer PSC		50/C32	50/C40	50/C50	50/C63	50/C80
31E 35 4777	Garant Reducer SK50 / PSC	XXX	XXX	XXX	XXX	XXX

All reducers include an integral calibration edge. *All reducers include a protective ring.*

SK tool mounting / HSK reducer		50/H63DI	50/H100DI
31E 35 4779	Garant Reducer with retraction SK/HSK	XXX	XXX
maximum torque	N·m	8	15

35 4785 – Mounted on the camera arm by means of screw fixing.

Function:

35 4785 – For exact measurement / checking of the rotational centre of turning tools. Scale value of the dial indicator 0.01 mm, measuring range 5 mm.

35 4785

35 4788

38D 35 4785	Rotational centre measurement unit	XXX
31E 35 4788	Garant Cutting edge cleaner	XXX

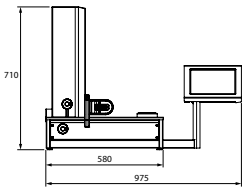
Garant VG Basic pre-setting device

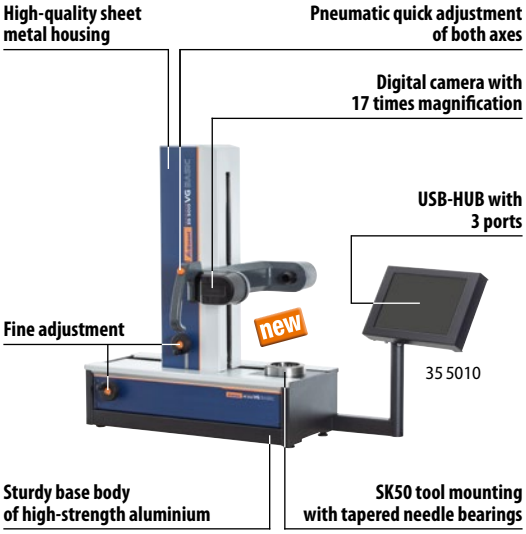
- 10 inch touch screen, with Windows 10 operating system.
- Focus on intuitive and extremely easy operation.
- Fine adjustment of both axes (X/ Z).
- Precise SK 50 needle-bearing taper.
- Compressed air connection at least 5 bar.

Application: For measuring and pre-setting tools at the machine or production island.

Supplied with: Cutting edge cleaner, SK 50 needle-bearing taper, measurement software in all major foreign languages and 3 metres of coiled compressed air hose with 1/4 inch coupling connector.

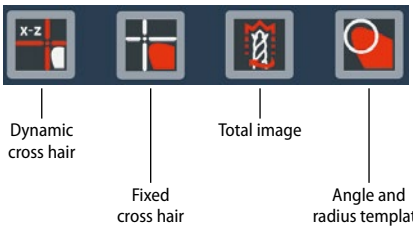
Optional extras:
- Sub-frame cupboard No. 354767.
- Reducers No. 354771/ 4773 / 4775 / 4777 / 4779.
- Label printer No. 085505 LW450.
- Labels No. 085565.
- Calibration mandrel No. 355105 90 (if using SK 50 tools).
- Spindle clamping No. 355102 1.





Type		VGBASIC
31E 35 5010	VG Basic pre-setting device	XXX
Base toolholder		SK 50
Quick adjustment		pneumatic
Measurement process		Image processing 10 inch touch screen
Measurement control		PC measurement electronics
Measuring accuracy	mm	0.01
Measuring range X	mm	400
Measuring range Z	mm	400
Width base	mm	580
Overall width	mm	975
Depth	mm	260
Height	mm	710
Weight	kg	40
Spindle load	kg	50
Power supply		100-230 V / 50-60 Hz

Measuring functions



Accessories for VG Basic

Suitable for: VG Basic pre-setting device No. 355010.

Application:

35 5102 – For clamping the tools / adapter in the SK 50 base spindle.

Note:

35 5105 – The calibration mandrel is required when SK 50 tools are being used, because the spindle lacks its own integral calibration edge.

35 5102

Type		1
31E 35 5102	spindle clamping	XXX

35 5105

Length	mm	90
31E 35 5105	Calibration mandrel SK 50	XXX
∅ D	mm	30

HOLEX Tool length pre-setting

Suitable for:

Size 40; 63 – HOLEX digital depth gauge No. 418742 300.

Size 50; 100 – Digital depth gauge No. L40510 1214 (bridge length 150 mm, measurement range 300 mm).

Advantage:
- Easy handling.
- Small footprint.
- Attractively-priced entry-level variants.

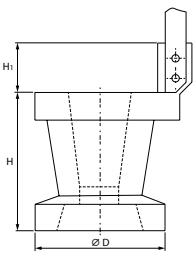
Application: Set the tool lengths directly at the machine.

Supplied with: Mounting block for depth gauge.

Note: All standard depth gauges can be used.

Size 50; 100 – A bridge length of 150 mm is absolutely necessary.

35 5050_40



for taper size		40	50	63	100
32B 35 5050	Tool length pre-setting device	XXX	XXX	XXX	XXX
Base toolholder		SK 40	SK 50	HSK 63	HSK 100
∅ D	mm	96	130	96	130
Height H	mm	100	135	70	70
	mm	37			

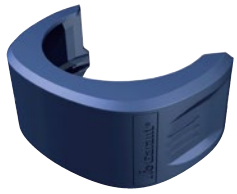
Garant Data clip for tool arbors

- Flexible plastic with locking stop.
- Area provided for an adhesive label (size 25×54 mm).

Suitable for: **Type SK–** DIN 69871, JIS B 6339 (MAS-BT), ANSI.
Type HSK – DIN 69893, form A, B, E, F, T.

Advantage:
- For insertion into the toolchanger groove.
- After presetting the tools, the labels are printed off with the measured dimensions and stuck on to the data clip.

Application:
- No need for tedious handwriting and rubbing off the sizes.
- Clean and tidy (get rid of the paper chaos!)

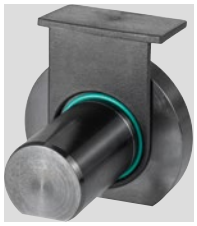


35 9140

for ∅ tool collar mm	63	63-OR	63-GY	100	100-OR	100-GY
31T 35 9140 Data clip for tool arbors	XXX	XXX	XXX	XXX	XXX	XXX
	10	10	10	10	10	10
Colour	blue	orange	grey	blue	orange	grey
suitable for colour code						

HOLEX Data clip for VDI tool arbors

Flexible plastic with locking stop.
Area provided for an adhesive label. (Size 25 × 54 mm).



35 9142

for VDI	30B	30R	40B	40R	
32B 35 9142 Data clip for VDI tool arbors	XXX	XXX	XXX	XXX	10
Colour	black	red	black	red	
suitable for colour code					

Tool fitting aid

- Aluminium housing.
- Interchangeable toolholders.

Suitable for: **Type SK** – for DIN 69871, DIN 2080, JIS B6339, and ANSI.
35 8500 – Toolholders No. 358550 – 358625.
35 8660 – Toolholders No. 358665 – 358668.

Feature: All adapters with a clamping screw.
35 8500 – Indexable toolholders 8×45°.
35 8660 – Indexable toolholders 4×90°.

Advantage: **Clamping without damaging the taper**.

35 8500

35 8660

38D 35 8500	Base unit **Tool Boy**	XXX
32B 35 8660	HOLEX Tool fitting aid base unit	XXX

for arbor size	32B 35 8665 HOLEX Toolholder for tool fitting aid SK	38D 35 8550 Toolholder for Tool Boy base unit SK	32B 35 8666 HOLEX Toolholder for tool fitting aid HSK-A	38D 35 8570 Toolholder for Tool Boy base unit HSK-A	32B 35 8667 HOLEX Toolholder for tool fitting aid VDI	38D 35 8620 Toolholder for Tool Boy base unit VDI	32B 35 8668 HOLEX Toolholder for tool fitting aid PSC	38D 35 8625 Toolholder for Tool Boy base unit PSC
20	–	–	–	–	XXX	(XXX)	–	–
25	–	–	–	–	XXX	–	–	–
30	XXX	XXX	–	–	XXX	XXX	XXX	–
32	–	–	XXX	–	–	–	–	–
40	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
50	XXX	XXX	XXX	XXX	XXX	(XXX)	XXX	XXX
63	–	–	XXX	XXX	–	–	XXX	XXX
80	–	–	XXX	(XXX)	–	–	XXX	(XXX)
100	–	–	XXX	XXX	–	–	–	–

Colour code: SK 40, TS 63, SK 40, HSK 63, SK 50, TS 100, HSK 100, VDI 30, VDI 40

HOLEX Tool fitting aid

- Aluminium housing.
- 45° and 90° indexable.
- Clamping the tools using a clamping lever.

Suitable for: **Type SK** – for DIN 69871, DIN 2080, JIS B6339 and ANSI.
Type HSK – for DIN 69893-1.

Application: For assembly at the workbench.

35 8696_40

for arbor size			40	50	63	100
32B 35 8696	Fitting aid	SK	XXX	XXX	–	–
32B 35 8697		HSK-A	–	–	XXX	XXX

HOLEX Fitting aid

- Anodised aluminium.
- SK: Slot nut steel C15 ground and case-hardened.
- HSK: Drive web over the drive slots to act as a stop.

Feature: Mounting flange single-sided 15°, allows cutting tools and securing screws on toolholders to be fitted and removed in a single clamping.

Size 30–50 – For SK.

35 8680_40

35 8680_63

for arbor size			30	40	50	63	100
32B 35 8680	Fitting aid	SK, HSK	XXX	XXX	XXX	XXX	XXX
Length		mm	60	80	120	–	–
Width		mm	60	80	100	–	–
Height		mm	46	60	100	66	84
Diameter		mm	–	–	–	126	167

Assembly boy

- Fibre-reinforced polyamide for high stability.
- For horizontal and vertical tool mounting.
- Very easy to operate.
- **10 years warranty against breakage and cracking.**
- **With 4 retainer magnets** in the horizontal socket **(security!)**

Suitable for: **ISO taper arbor SK40.**

Advantage: No risk of damage to expensive tools.

Application: For assembly at the workbench.
For efficient setting up and stripping down of cutting tools and pull studs on tool arbors.

35 8690

for arbor size			40
38D 35 8690	Assembly boy	SK	XXX
Length		mm	120
Width		mm	150
Height		mm	120
Weight		kg	0.55

HOLEX Fitting aid

- Robust metal frame.
- **One mounting taper for mounting tools.**
- **One mounting taper for attaching the pull stud**.
- Fixing the mountings by fixed or pivoting Tee-nuts.

Suitable for: **Type BT JIS B6339 and size 40 can also be used for SK40.**

Advantage: No risk of damage to expensive tools.

Application: For assembly at the workbench.

35 8685_40

for arbor size			30	40
32B 35 8685	Fitting aid	SK, BT	XXX	XXX
Length		mm	200	253
Width		mm	120	140
Height		mm	148	167

FAHRION® PRÄZISION Assembly jig with rollers

Suitable for: For all popular tool arbors such as SK (DIN 69871), HSK (forms A, B, C, D, E, F), polygon shanks, MAS/BT (JIS B 6339), and CAT (ANSI B5.50).

Application: For easy and reliable clamping of tool arbors **at the collar** using rollers to mount and remove cutting tools – friction lock is self-clamping and ideal for HSK forms E and F, and also polygon shank arbors.

35 8695

Collar ∅	mm	25	32	40	50	63	97	100
33F 35 8695	Assembly jig with rollers	XXX	XXX	XXX	XXX	XXX	(XXX)	XXX
suitable for arbor		HSK 25	HSK 32; C3	HSK 40; C4	SK 30; HSK 50; C5	SK 40; HSK 63; C6; MAS/BT 40; CAT 40	SK 50	HSK100; CAT50; MAS/BT50

Garant Magnetic gripper

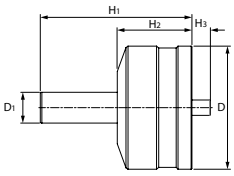
- Optimised and **safe working procedure.**
- **Collision protection** when approaching thanks to **compression spring safety compensation** of 10mm.
- By exchanging the inserts, individual workpiece geometries can be automatically separated, transported and stored.
- Machine running times without long interruptions.
- High efficiency due to optimised utilisation.
- Significantly less contamination by oil mist.
- Permits **unmanned operation**.
- Reduces the risk of injuries.
- Can be used in all commonly-used Weldon arbors.

Application: The tool can lift and release ferro-magnetic workpieces. Activation of the magnet by coolant (IKZ) or compressed air. Positive engagement of the machined workpiece by closure with the matching contour of the exchangeable plate, for transport to the desired destination within the machine room.

Supplied with: Supplied with exchangeable plate 358716 with height 20 mm. Supplied with spring and clamping screw for the Weldon arbor.

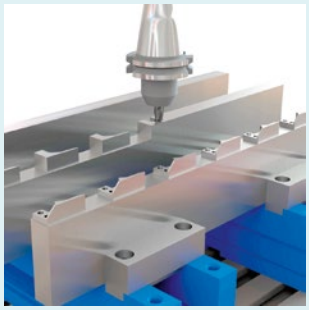
35 8711

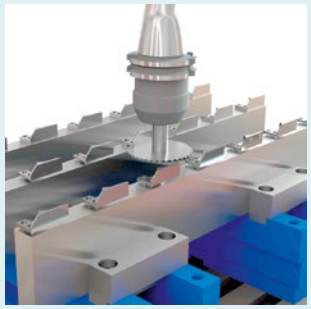
∅ D	mm	80	120	160
31V 35 8711	Magnetic gripper	XXX	XXX	XXX
∅ D_1	mm		20	
	mm	98.5	98.5	108.5
Height H_2	mm	48.5	48.5	58.5
Height H_3	mm		12	

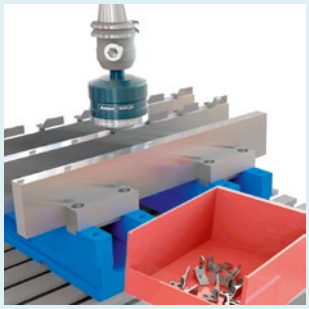


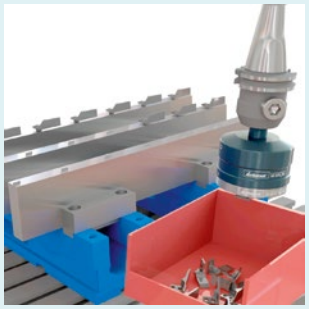
Garant Magnetic grippers – automation for your existing machine

- Lifting and rotating ferromagnetic workpieces.
- The magnet is activated by the headstock by means of coolant or compressed air.
- Can be used in all commonly-used Weldon arbors.
- Individual machining of the interchangeable inserts to suit your workpiece geometries.









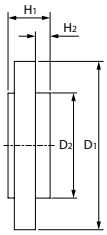
Interchangeable insert for magnetic gripper

35 8716 – Exchangeable plates in polyamide PA6.
35 8717 – Exchangeable plate in aluminium.

Application: Introduction of the matching contour of the finished workpiece for close-fitting parting off (max. 50 rpm) and transport of the component. Connection to the magnetic gripper by 4 screws.

Note: The exchangeable plates can also be made in-house. As well as the introduction of workpiece geometries for machining, additive printing processes can also be used.

35 8716

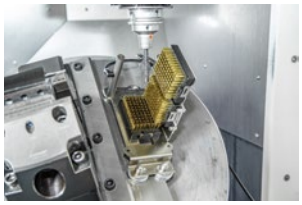


∅ / height		mm	80/20	80/40	120/20	120/40	160/20	160/40
31V 35 8716	Interchangeable insert for magnetic gripper, PA		XXX	XXX	XXX	XXX	XXX	XXX
31V 35 8717	Interchangeable insert for magnetic gripper, aluminium		XXX	XXX	XXX	XXX	XXX	XXX
∅ D_1		mm	80	80	120	120	160	160
∅ D_2		mm	50	50	90	90	130	130
		mm	20	40	20	40	20	40
Height H_2		mm	7	27	7	27	7	27

Garant Tool cleaning station TC1

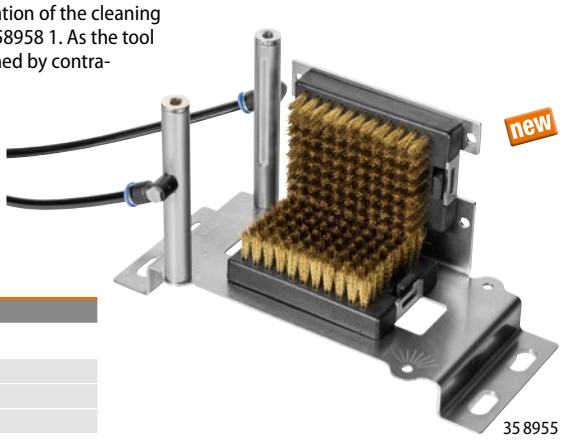
- Removes chips and coolant residues from your **automatic machining process**.
- **Reduces the risk** of damage to your machines, components and tools.
- Cleans attached chips from milling cutters, drills and taps, and thus offers **improved process reliability in manufacturing**.
- **Click&Clamp** – Interchangeable brushes for individual applications.

Base frame of brushed stainless steel to take the brass brushes that are supplied. In addition two stainless steel nozzles No. 358959 can be connected to the compressed air supply at four positions. The system can be extended by the addition of a third brush for cleaning longer tools or tool shanks by extension module No. 358957 1.



Application: For cleaning the tool and tool arbor, especially in automated production. Installation of the cleaning station for bolting into the machining area or with optional magnetic feet No. 358958 1. As the tool passes over the brushes in an axial and radial sense, the tool or the arbor is cleaned by contra-rotating motion.

Supplied with: Base frame, 2 nozzles No. 358959 Air, 1 brush set No. 358956 1, 2 compressed air connections with Y-piece and 1.5 m hose.



35 8955

Version			TC1
31E 35 8955	Tool cleaning station		XXX
Length L		mm	220
Width B		mm	96
Height H		mm	125

Accessories

35 8957 – For cleaning the shank of the tool arbor.
35 8958 – For attachment to magnetic locations in the workroom.
Size HYDRO – Enlarged jet channel for alternative operation with cooling lubricant.

Application:
35 8956 Size 1 – Universal application.
Size 2 – Gentle cleaning of the tool arbor, no discolouration.
Size 3 – For removal of built-up edges.

35 8956_1

Type			1	2	3
31E 35 8956	Cleaning brush set, 2 pieces		XXX	XXX	XXX
Length L		mm		90	
Width B		mm		60	
Version			Brass	Polyamide	Abrasive polyamide

35 8957

Type		1
31E 35 8957	Brush extension module	XXX

Type		1
31E 35 8958	Magnetic foot set, 4 pieces	XXX

35 8958

Type		AIR	HYDRO
31E 35 8959	Nozzle for the tool cleaning station	XXX	XXX
Working medium		Compressed air	Cooling lubricant

35 8959

Cleaning propeller - cleaning the machine space and the workpiece

- Robust design.
- Opening and closing the vane by the speed of the spindle.
- **Marked ends to the vanes**, for optimum visibility.
- For installation in any toolholder with through-coolant capability.

Advantage:
- Efficient cleaning of clamping equipment, workpieces and work tables.
- Removal of accumulated chips and blowing out pockets of water.
- Perfect complement to the automated work process.

Optional extras: Spare cleaning propeller No. 358951.

35 8950

Blade ∅			260
31E 35 8950	Cleaning propeller		XXX
Shank ∅		mm	20
Speed range		rpm	5000 – 8000

Spare cleaning propeller

Suitable for: Cleaning propeller No. 358950.

Supplied with: Supplied with spring, positioning pin and retainer pin.

35 8951 _4

Type			1	4
31E 35 8951	Spare cleaning propeller		XXX	XXX
maximum speed		rpm	8000	
Number of vanes		pcs.	1	4

Cleaning stick - cleaning the machine space and the workpiece

Advantage:
- Thorough cleaning of the interior of the machine.
- Perfect complement to the automated work process.
- Suitable for **cooling lubricants** (5 – 120 bar) and **compressed air** (5 – 10 bar).

Application:
- Particularly suitable for cleaning out holes, pockets and undercuts.
- Directed approach to the position to be cleaned.
- For installation in any toolholder with through-coolant capability.

Optional extras: Universal nozzles No. 358967.

35 8966

Length L		mm	70	140	220
38L 35 8966	Cleaning-Stick		(XXX)	(XXX)	(XXX)
Shank ∅		mm	16		
Speed range		rpm	30 – 400		
Working medium			Compressed air; Cooling lubricant		

Universal nozzles

The intensity of the cleaning jet is influenced by the 3 different nozzles.

Suitable for: Cleaning Stick No. 358966.

35 8967

Type			40	45	50
38L 35 8967	Universal nozzles for cleaning stick		(XXX)	(XXX)	(XXX)
Number of outlets		pcs.	3		
Rate of flow			low	medium	high

Cleaning ball - cleaning the machine space and the workpiece

Advantage:
- Attractively priced unit for flexible automation of the machine.
- Quick automatic cleaning for maximum machine utilisation.
- Machine ancillary times reduced to a minimum.
- Increase safety for the machine operator.
- 360° working range.
- For installation in any toolholder with through-coolant capability.

35 8952

Shank ∅ d_1		mm	20
33T 35 8952	Cleaning ball		XXX
Length L		mm	78
L_1		mm	35
∅ D		mm	37
maximum speed		rpm	100
max. coolant pressure		bar	80
Working range		degrees	360

Cleaning tool

Suitable for collet chuck or Weldon holder (clamping ∅ 16 mm).
For attachment to the machine spindle of CNC machines. For automatic cleaning.

Function: Optimum cleaning of the inside of a CNC machine is achieved by rotation of the ball and movement of the spindle. The cleaning medium is the cooling lubricant that is fed through the spindle.

Advantage:
- Thorough cleaning of the inside of a machine.
- Reduction of cleaning time.
- Working range of 360°

		60V	60H
38L 35 8971	Cleaner Ball	(XXX)	(XXX)
Shank ∅	mm	16	
Length L	mm	110	120
Speed	rpm	100	
Pressure	bar	5 - 120	
Number of outlets	pcs.	14	15
Version		vertical	horizontal

Marking tool

35 8740/8751/8752 – Body of aluminium with Weldon shank. Stepless adjustment of the pre-load force. Character depth 0.1 - 0.3 mm.

35 8757–8759 – The greater the eccentricity L_2, the heavier the marking. Rule of thumb for a well-defined legend: feed rate (mm/min) × 10 = spindle speed (rpm).

Advantage:

35 8740/8751/8752 – Surface sealing without weakening or damaging the material. Inscription speed corresponds to the maximum feed rate. High wear resistance, with long working life for the special needles. Suitable for inscriptions on round surfaces. Can be used on the lathe. High process reliability. Needles easily withdrawn, therefore **quick needle change.** Irregularities up to 7 mm in the workpiece surface (depending on profile) can be compensated.

Application:

35 8740/8751/8752 – For marking on a wide variety of materials such as aluminium, titanium, steel, bronze, copper, brass, plastics etc. Smaller needle tips allow inscriptions on harder surfaces up to 57 HRC.

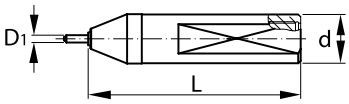
Supplied with:

35 8740 – size 12 – including **3 needles** No. 358745 size 0.3 – 0.5 – 0.8. Size 20 –including **3 needles** No. 358745 size 0.3 – 0.6 – 1.0.

Note:
35 8751/8752 – Order marking needles No. 358755 – 358759 **separately**.

Supplied with 3 needles

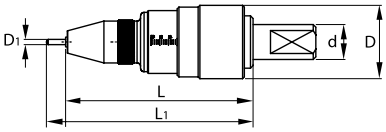
35 8740_20



Shank ∅ d	mm	12	20
32B 35 8740 HOLEX Marker		XXX	XXX
L	mm	66	73
∅ D_1	mm	3	
∅ d	mm	12	20

Order needles separately!

35 8751



38D 35 8751 AMF Marker XL		(XXX)
38D 35 8752 AMF Marker L		(XXX)
L_1 (35 8751)	mm	125.5
L_1 (35 8752)	mm	119
L (35 8751)	mm	113
L (35 8752)	mm	108
∅ D_1 (35 8751)	mm	4
∅ D_1 (35 8752)	mm	3
∅ d	mm	20
∅ D (35 8751)	mm	46
∅ D (35 8752)	mm	42

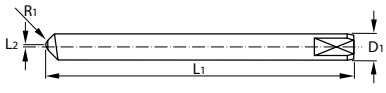
Marking needles

Radius	mm	0,3	0,5	0,6	0,8	1,0
32B 35 8745 HOLEX Spare needle		XXX	XXX	XXX	XXX	XXX
suitable for		358740				

35 8745

35 8757

∅ D_1	mm	3	4	L_1 mm	L_2 mm	R_1 mm
38D 35 8755		(XXX)	(XXX)	53.5	0	0.5
38D 35 8756		(XXX)	(XXX)	53.5	0	1
38D 35 8757	AMF Marking needle	(XXX)	(XXX)	53.5	0.1	1
38D 35 8758		(XXX)	(XXX)	53.5	0.2	1
38D 35 8759		(XXX)	(XXX)	53.5	0.3	1
suitable for		358752	358751			



Garant Contact point calibration aid

- Very easy calibration of the 3D contact point.
- Completer calibration process in X, Y and Z in just a few minutes.
- Protection against collisions and spindle damage by the spring pin.
- Very easily fixed to the to the worktable by means of a magnetic stand.
- Highly accurate and consistent calibration results.
- The carbon casing ensures shock-proof characteristics, high-quality design and temperature resistance.

Advantage:
- The spring pin avoids spindle damage when the unit is blocked out.
- Easy handling and enormous saving of time.
- This functions for all manufacturers.
- Calibration in a single operation and without additional equipment such as setting rings and gauge blocks.

Application: For calibrating the 3D contact point.

Supplied with: Supplied in a case with foam, calibration aid with magnetic stand, nut spinner for removing the spring pin, T-wrench for stopping or unlocking the spring.

Procedure:
- *Move the spindle nose or calibrated tool to the sprung pin and lock it with the side clamping screw.*
- *Use a contact point to probe the position of the pin.*
- *Unscrew the pin and perform diameter calibration within the integral setting ring Ø 25mm.*

35 8975

Calibration diameter		mm	25
31E 35 8975	Contact point calibration aid		XXX
Height		mm	178

Garant Position and run-out device

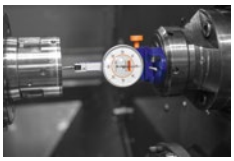
- Compact design.
- Precision dial comparators can be exactly adjusted using the adjustment screw.
- Precision dial comparators are suitable for vertical or horizontal use.
- Cylindrical attachment in various diameters, or quick fixing of the inspection device using a magnet.

Advantage:
- Efficient measurement of position and run-out in a short time.
- No laborious fiddling with stands and dial indicators.
- Achieve greater process reliability by regular checking.
- Easy handling.
- Fewer machine stoppages and longer tool lives.

Application: For checking the axes, run-out measurement, determination of positions (such as toolholder, workpiece).

Supplied with: Supplied with case with foam, test device, precision dial comparator, attachment magnet, cylindrical attachment mount, mirror for reading the measured value, hexagon key L-wrench.

35 8980



Example for turning:
- *Axis calibration (such as the position of the headstock or tailstock)*
- *Calibration of the revolver position or fitted toolholders*
- *Determining radial run-out / tumbling of driven tools*

Milling example:
- *Checking radial run-out: Component central, tool, etc.*

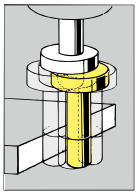
Adjustment travel		mm	30
31E 35 8980	Position and run-out device		XXX

Edge finder (straight shank)

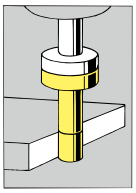
The contact point has a flexible connection to the body via a spring, with an **alignment accuracy of 0.01 mm.**
All parts fully hardened and ground.

35 9005 – Non-magnetic.
Size 10/4 – With stepped contact point 10 and 4 mm ∅.

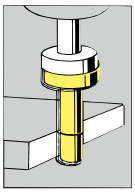
Application: For alignment of component reference surfaces or edges.
Spindle speed approx. 600 rpm.



1. Start up – edge finder runs eccentric.



2. Edge finder touches the workpiece and runs true.



3. Edge finder jerks aside = reference point.

Size 6 and 10

Size 10/4 with stepped contact point.

Contact point ∅		mm	6	10	10/4
38D 35 9000	Edge finder		XXX	XXX	XXX
38D 35 9005	Edge finder TN		–	XXX	XXX
Tool shank ∅		mm	6	10	10
Overall length		mm	48	84	90

Spare springs for edge finder No. 359000

∅×Overall length		mm	2,6×25	4,6×40
38D 35 9010	Spare spring for edge finder No. 359000		XXX	XXX
suitable for edge finder 359000			6	10 and 10/4

Edge finder with indicator light

The spring-mounted spherical tip protects the unit from damage if contact is too violent.
Functional parts hardened and ground.

35 9078 – Contact accuracy ± 0.005 mm.
35 9070/9075 – Contact accuracy ± 0.01 mm.

Function: When **the spherical tip contacts** a **metallic component,** batteries cause the lamp to light = Detection of the reference point.

Application:
- **Alignment** of component reference surfaces or edges.
- **Determination of bore centres** to the machine spindle.

35 9075/9078 – When making contact in the Z axis, the reference length has to be determined using the pre-setter and taken into account.

Supplied with: Supplied with special battery No. 081560 A23.

35 9070 / **2D** 35 9075 / **3D** 35 9078 / **3D**

Tool shank ∅		mm	16	20
38D 35 9070	2D edge finder with indicator light		XXX	XXX
38D 35 9075	3D edge finder with indicator light **short**		XXX	XXX
38D 35 9078	3D edge finder with indicator light **long**		–	XXX
Spherical point ∅		mm	10	
Overall length (35 9070)		mm	94	
Overall length (35 9075)		mm	118	
Overall length (35 9078)		mm	–	167

HOLEX Optical zero setting device

Special hardened steel.

Function:
- Approach the contact face with the tool upright.
  When the LED lights up, the reference dimension 60 mm (±0.01) has been reached.
  A safety spring range of approx. 2 mm is provided for overdrive.
- Size **60M** is magnetic for horizontal use.

Application: For zeroing tools and for determining the machine spindle reference point.

Supplied with: With test certificate and instruction manual.
Special battery No. 081560 size 357.

Note: For use only on electrically conductive workpieces. Not waterproof.

Centre bore
optimum for turned parts.

Type			60	60M
32B 35 9081	Optical zero setting device		XXX	XXX
Version			Standard	magnetic
a		mm	60	
b		mm	31	
c		mm	18	

HOLEX Zero setting device

Special hardened steel.

Size 50M – With magnet.

Function:
- Level the spring-loaded probe face with the reference face of the body (e.g. using a straight edge) and set the dial indicator to –0.25.
- Place the zero setting device on the workpiece and feed the tool down on to spring-loaded probe face until the dial indicator reads 0. The tool is now positioned exactly 50 mm (± 0.01 mm) above the workpiece to be machined (dimension for input into machine controls).

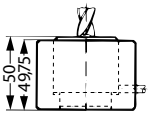
Application: For setting tools (e.g. end mills) to zero and for determining the reference point of the machine spindle.

Supplied with: Wooden case, dial indicator, measurement report and instruction manual.

Note: For spare dial gauge No. 359086 see the spare parts list.

35 9085

35 9085



Type		50	50M
32E 35 9085	Zero setter	XXX	XXX
Dial indicator display	mm	0.01	
Height of body – reference face	mm	49.75	
Height of the spring-loaded probe face when the dial indicator reads 0	mm	50	
Body ∅	mm	65	
∅ spring-mounted contact face	mm	47	

HOLEX Fine zero setter

- Anodised aluminium.
- Sturdy base plate of hardened steel (5 mm thick).

35 9091 Size 100M – With magnetic function to prevent slipping.

Application: **For setting micro drills and micro mills etc.**

Supplied with: 35 9091 – Wooden case and measurement certificate.

Note: For spare dial gauges No. 359089 and 359092 see the spare parts list.

35 9088

35 9091

Type		100	100M
32E 35 9088	Fine zero setter	XXX	–
32E 35 9091		XXX	XXX
Body ∅ (35 9091)	mm	54	
Length (35 9088)	mm	48	–
Width (35 9088)	mm	25	–
Height	mm	100	

IP 67

Garant Digital 3D edge finder

- High accuracy and linearity. Suitable for measurement of workpieces, measurement can be performed over the entire working range.
- Independent of the machine controls.
- **Very easy to read due to combined display:** Graphic bar for dynamic travel information; digital display gives exact measured value.
- Convenient and simple concentricity adjustment.
- Large working range in all directions (x, y, z: 7 mm).
- Compact metal body.
- **Dust-tight and watertight = IP 67.**
- Predetermined breaking point.

Application: Precision measuring device for milling and spark erosion machines
For determining component zero points, measurement of lengths, bore centres and reference faces.

Supplied with: With battery No. 081560 size CR2032 and contact point No. 359505 size 4.

Optional extras: Replacement battery No. 081560 size CR2032.

Note: For contact point set No. 359505 see the spare parts list.

31T 35 9500	Digital 3D edge finder with contact point (∅ 4 mm)	XXX
Shank ∅	mm	16
Scale divisions	mm	0.005
Measuring accuracy	mm	< 0.01
Displacement travel x, y, z respectively	mm	7
Body length	mm	82
Body depth	mm	39
Body width	mm	65
free length contact point	mm	40
Overall length (body and contact point)	mm	134
Adjustment travel	mm	±0.4
Weight	kg	0.52
Spare contact point		359505_4

IP 67

Analogue 3D edge finder

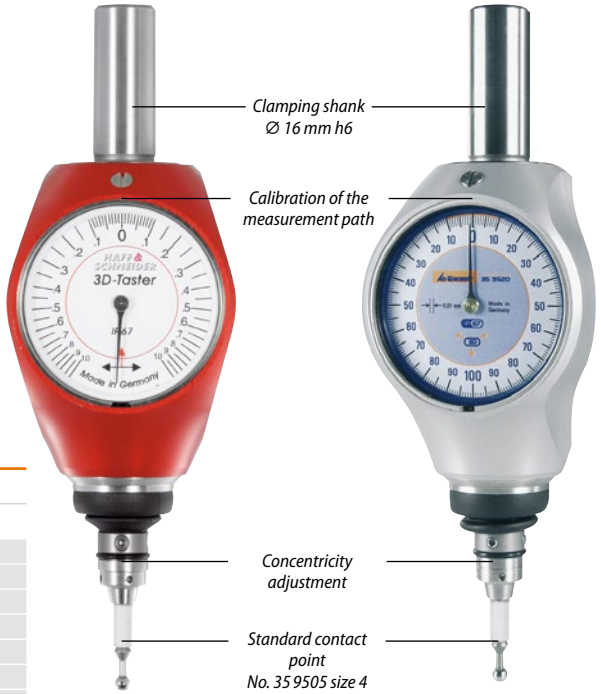
- Linear scale.
- Suitable for measuring.
- Precise operation.
- Compact design avoids collisions when finding edges.
- **Dust-tight and watertight = IP67.**
- Convenient and exact concentricity adjustment.
- One scale for both radial and axial run-out.

Application: Precision measuring device for milling and spark erosion machines. For determining component zero-points, measurement of lengths, bore centres and reference edges.

Supplied with: With contact point No. 359505 size 4.

Optional extras: Contact point No. 359505 size 6.

Note: Digital 3D edge finder see No. 359500.
For edge finder inserts No. 359505 and a spare glass No. 359510 see the spare parts list.



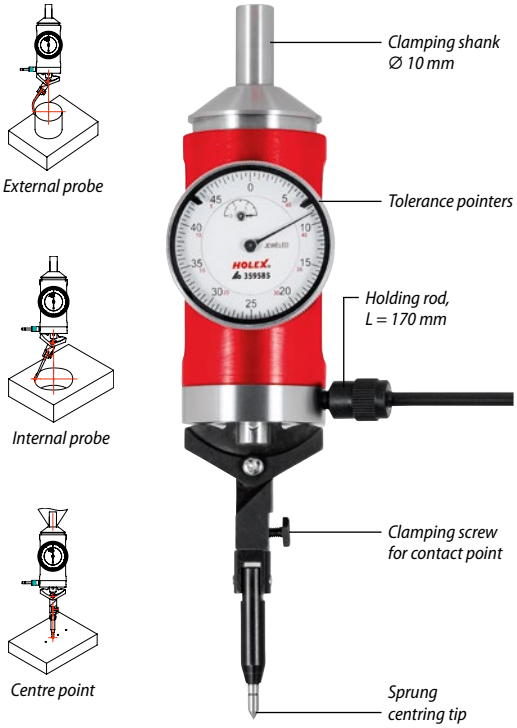
31T 35 9520	Garant	3D edge finder with contact point (Ø 4 mm)	XXX
36T 35 9550	HAFF & SCHNEIDER		XXX
Shank Ø		mm	16
Reading accuracy		mm	0.01
Measuring accuracy		mm	0.01
Displacement travel x, y, z respectively		mm	7
free length contact point		mm	40
Overall length (body and contact point)		mm	134
Display Ø		mm	50

HOLEX Centre finder – with non-rotating dial

Sturdy metal casing suitable for workshop use with dial indicator Ø 42 mm (scale graduation 0.005 mm). Holding rod can be fitted on the left or right. Centre finder can be used vertically and horizontally. Overall height without contact point 140 mm. Recommended speed approx. 50 – 100 rpm. Working range up to 300 mm. Centring accuracy 0.02 mm.

Application: Determining the centres of bores and shafts.

Supplied with: Centre finder with holding rod, holding magnet with connection cord
1x each internal contact point:
50 mm for Ø 3.5 mm – 100 mm
100 mm for Ø 50 mm – 200 mm
150 mm for Ø 50 mm – 300 mm
1x each curved external contact point:
50 mm for Ø 0.0 mm – 100 mm
100 mm for Ø 0.0 mm – 200 mm
150 mm for Ø 0.0 mm – 300 mm
1 sprung centre punch (centre contact point)

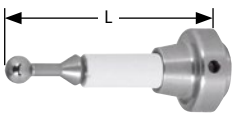


32B 35 9585	Centre finder with non-rotating dial		XXX
Working range Ø internal		mm	3.5 – 300
Working range Ø external		mm	0 – 300
Length without shank and probe		mm	118
maximum speed of spindle		rpm	50 – 100
Measuring range of the dial indicator		mm	3

Accessories for 3D edge finder

Contact point for 3D edge finder

Suitable for:
Size 4 – Analogue and digital 3D edge finders No. 359520 / 9500 / 9550.
Size 6 – Analogue 3D edge finder No. 359520 / 9550.



35 9505_4

35 9505_6

Spherical point Ø		mm	4	6
31T 35 9505	Garant	Contact point for 3D edge finder	XXX	XXX
Spherical point Ø		mm	4	6
Overall length L		mm	31	56.5

Spare glass for analogue 3D edge finder

Suitable for: Analogue 3D edge finder No. 359520 / 9550 and old version No. 359100.

35 9510

36T 35 9510	Spare glass for analogue 3D edge finder	XXX

Precision centre finders

The dial indicator remains in the required position during the working process.

- With fixed cylindrical clamping shank ∅ 16 mm.

35 9610 – ■ With adjustable slides for a large working range.

Accuracy: **0.005 mm centring or working accuracy.**

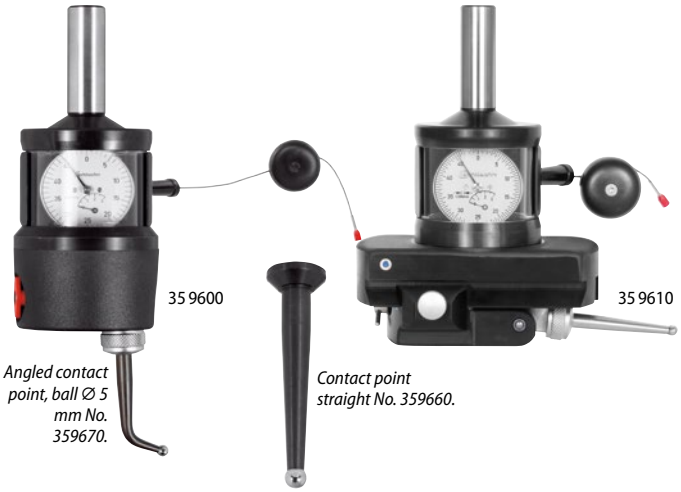
Application:
- For **horizontal and vertical** use.
- Alignment of bores, shafts, plane surfaces, reference edges and grooves centrally to the working spindle.
- Checking the concentricity of working spindles.

Supplied with:

35 9600 – **C OS –** Contact point with ball ∅ 5 mm No. 359660 and curved contact point with ball ∅ 5 mm for external ∅.

35 9610 – **C III –** Contact point with ball ∅ 5 mm No. 359660 (also applicable for external ∅).

Optional extras: Contact points, see No. 359650 – 359670.



Angled contact point, ball ∅ 5 mm No. 359670.

Contact point straight No. 359660.

Dial indicator reading		mm	0,005
38D 35 9600	Centre finder **C OS with clamping shank ∅ 16 mm**		XXX
38D 35 9610	Centre finder **C III with clamping shank ∅ 16 mm**		XXX
Length without shank and probe (35 9600)		mm	92
Length without shank and probe (35 9610)		mm	102
Body ∅ (35 9600)		mm	60
maximum slide ∅ (35 9610)		mm	116
maximum speed of spindle		rpm	50 – 100
Measuring range of the dial indicator		mm	2.5
Probe pressure		N	1

	Can be fitted with (including special accessories):	C OS centre finder		C III centre finder	
		Range mm ∅	Depth mm	Range mm ∅	Depth mm
Internal ∅	Contact point 5 mm ∅	6–125	55	6–200	55
	Contact point 1.6 mm ∅	2–125	55	2–220	55
	Right-angle contact point	–	–	20–220	55
	Extension	–	–	2–400	150
Outer ∅	Contact point	0–125	20	0–150	55
	Right-angle contact point	–	–	0–220	55
	Extension	–	–	0–300	150
Flat surface	Flat surface contact point	–	–	0–90	28
	Contact point	120–160	–	90–280	40
	Right-angle contact point	–	–	90–280	40
	Extension	–	–	280–480	–

Optional extras — Probe

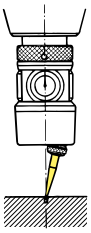
Suitable for: Centre finder No. 359600 and 359610.

35 9650 – Only for centre finder No. 359610.

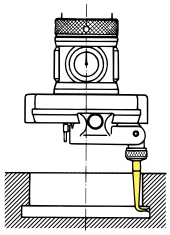
Supplied with:

35 9650 – **With contact point, ball ∅ 1.6 mm and angled contact point, ball ∅ 2.5 mm. Flat face contact point** for aligning faces up to 90 mm ∅. **Extension** for enlarging the working range and for inaccessible places.

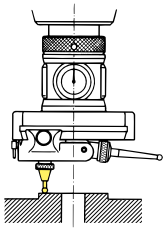
Accessories from the 4-part set No. 35 9650.



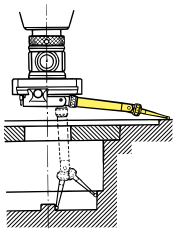
Contact point, ball ∅ 1.6 mm.



Right-angle contact point, ball ∅ 2.5 mm.



On request: Flat contact point.



On request: Extension.

38D 35 9650	Probe / extension set	XXX
38D 35 9655	Contact point, ball ∅ 1.6 mm	XXX
38D 35 9660	Spare contact point, straight ∅ 5 mm	XXX
38D 35 9665	Angled contact point ∅ 2.5 mm	XXX
38D 35 9670	Angled contact point ∅ 5 mm	XXX

Straight contact point No. 35 9660.

Articulated holders

- Steplessly adjustable mechanical central clamping of all joints.
- Shank length = 40 mm for direct clamping.

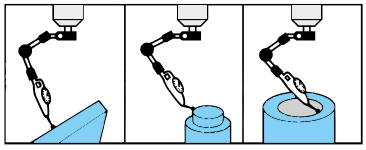
35 9682 – ■ Holder for dial indicators with shank ∅ 6 or 8 mm or dovetail.

35 9680/9685 – ■ Holder for dial indicators with shank ∅ 8 mm or dovetail.

Supplied with:

35 9685 – No. 359680 including HOLEX dial indicator No. 436341 size 0.4/40.

Radius of action		mm	120	170
38D 35 9680	Articulated holder		XXX	–
38D 35 9682			–	XXX
34F 35 9685	Articulated holder with lever dial indicator HOLEX		XXX	–



C5 Cal

HSC | DIN 69871 | DIN 69893 | JIS B6339

air turbine spindles

High-speed spindles

Air-powered high-speed spindle, constant speed under load 25,000 – 65,000 rpm. depending on the version. Power up to 1kW.

Application: High-speed spindles allow higher cutting speeds and feed rates. They allow above all the use of tools with small diameters (6 mm).

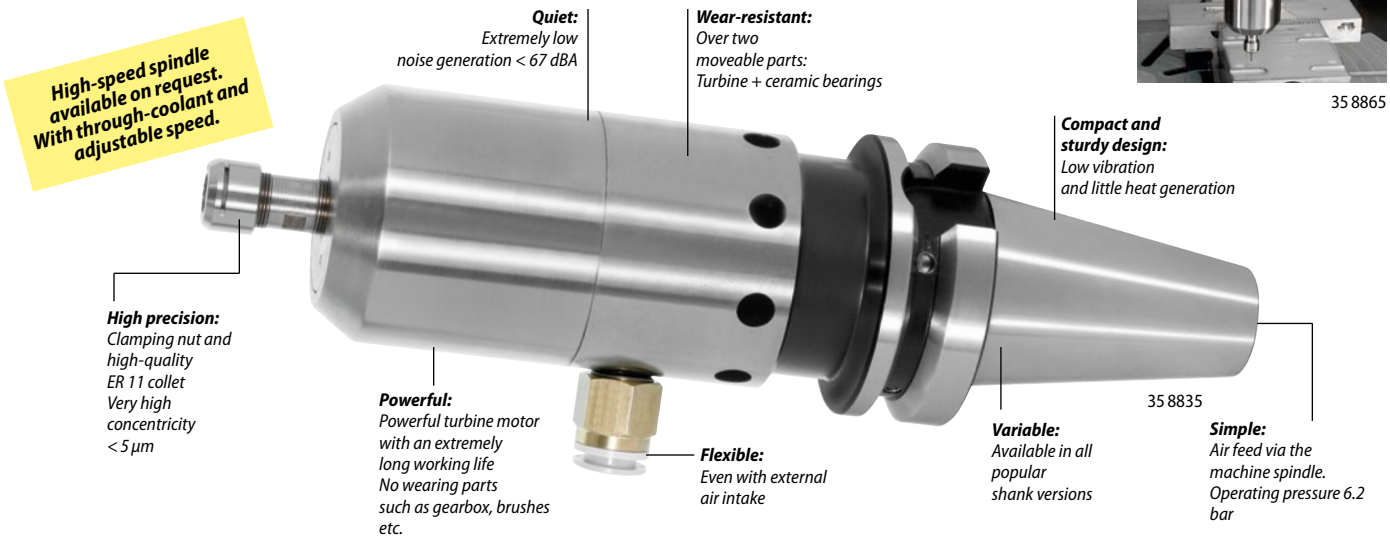
Supplied with: High-speed spindle, collet, collet clamping nut, wrench, sealing plug, air filter, connection hose.

Optional extras: Tool-change turret for automatic tool-change. Required only for **external** air supply - available on request.

Note: Use clean dry compressed air at approx. 6.2 bar.
Further spindles available on request: all commonly-used shank versions, different performance classes and speeds.

35 8825
Device for automatic tool changing on request.

35 8865



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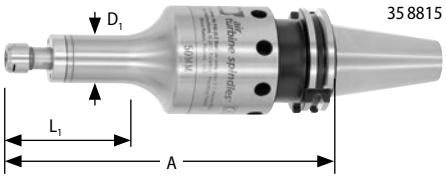
- **Higher machining speed** *with smaller tools.*
- **Continuous use** *due to integral air cooling. No standstill times.*
- **Environmentally friendly.** *Patented airflow regulation minimises air consumption.*
- **Protects the machine.** *Rotation is generated by high-speed spindle – the machine spindle remains stationary.*
- **Longer working life** *of the tools.*
- **Very good surface quality of the workpieces.** *Less rework required.*

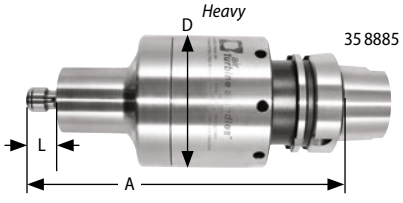
Speed		rpm	25000	40000	50000	65000
331 35 8805	High-speed spindle, compact **Type 625**	SK 40	–	–	XXX	(XXX)
331 35 8815	High-speed spindle, compact, slim **Type 625L 50 mm**	SK 40	–	(XXX)	(XXX)	–
331 35 8825	High-speed spindle, heavy **Type 650**	SK 40	(XXX)	(XXX)	(XXX)	–
331 35 8835	High-speed spindle, compact **Type 625**	BT 40	–	–	XXX	(XXX)
331 35 8845	High-speed spindle, compact, slim **Type 625L 50 mm**	BT 40	–	–	(XXX)	–
331 35 8855	High-speed spindle, heavy **Type 650**	BT 40	–	(XXX)	(XXX)	–
331 35 8865	High-speed spindle, compact **Type 625**	HSK-A 63	–	(XXX)	XXX	(XXX)
331 35 8875	High-speed spindle, compact, slim **Type 625L 50 mm**	HSK-A 63	–	(XXX)	(XXX)	–
331 35 8885	High-speed spindle, heavy **Type 650**	HSK-A 63	(XXX)	XXX	(XXX)	–
∅ D (35 8805, 35 8815, 35 8835, 35 8845, 35 8865, 35 8875)		mm	–	57.15	57.15	57.15
∅ D (35 8825, 35 8855, 35 8885)		mm	81.79	81.79	81.79	–
∅ D_1 (35 8815, 35 8845, 35 8875)		mm	–	25	25	–
L (35 8805, 35 8825, 35 8835, 35 8855, 35 8865, 35 8885)		mm	22			
L (35 8815, 35 8845, 35 8875)		mm	–	25	25	–
L_1 (35 8815, 35 8845, 35 8875)		mm	–	55	55	–
A (35 8805)		mm	–	163	163	163
A (35 8815)		mm	–	169	169	–
A (35 8825)		mm	180	180	180	–
A (35 8835)		mm	–	–	173	173
A (35 8845)		mm	–	–	179	–
A (35 8855)		mm	–	189	189	–
A (35 8865)		mm	–	154	154	154
A (35 8875)		mm	–	177	177	–
A (35 8885)		mm	197	197	197	–

Compact, slim



Compact

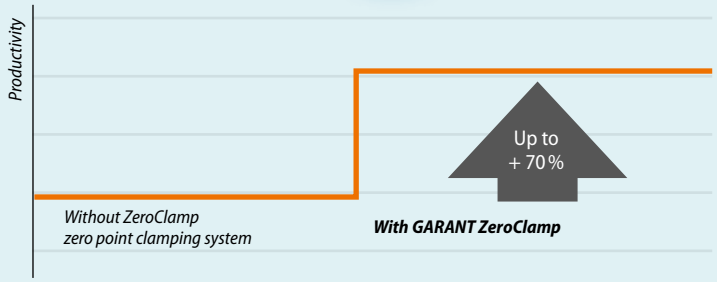
Heavy



Garant ZeroClamp zero-point clamping system

More than 10 years of GARANT ZeroClamp – choose the right system!

Increased productivity



Cost saving

Time saving

- Set-up times
- Change-over times
- Ancillary times

An overview of the critical advantages:

Thermal symmetry

Absolute zero point
Compensation for thermal expansion is always towards the centre.

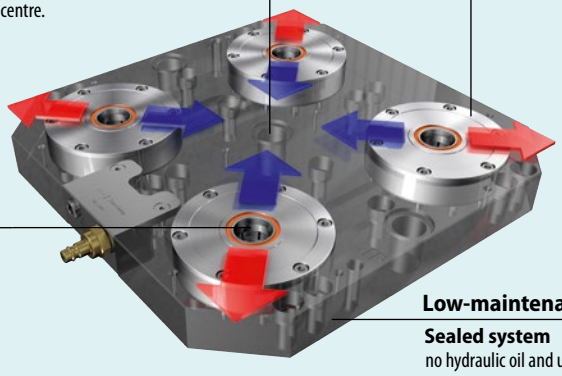
Compensates pitch errors
up to ± 0.05 mm per pot:
Fixed zero point in the centre of the table.

Simply brilliant

Only 1 stud type
no zero point, loose studs or free studs.

Powerful
12.5 kN to 40 kN.

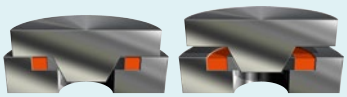
Compressed air connection
Only 5.5 bar required to release the clamping studs.



Precise

Precision taper
On insertion, the resiliently sprung taper of the socket expands and ensures a flat face contact seating.

HSK principle
Functions like an HSK tool taper.
Free of radial run-out and axial face run-out with repetition accuracy < 2.5 µm.



Low-maintenance

Sealed system
no hydraulic oil and unaffected by chips.

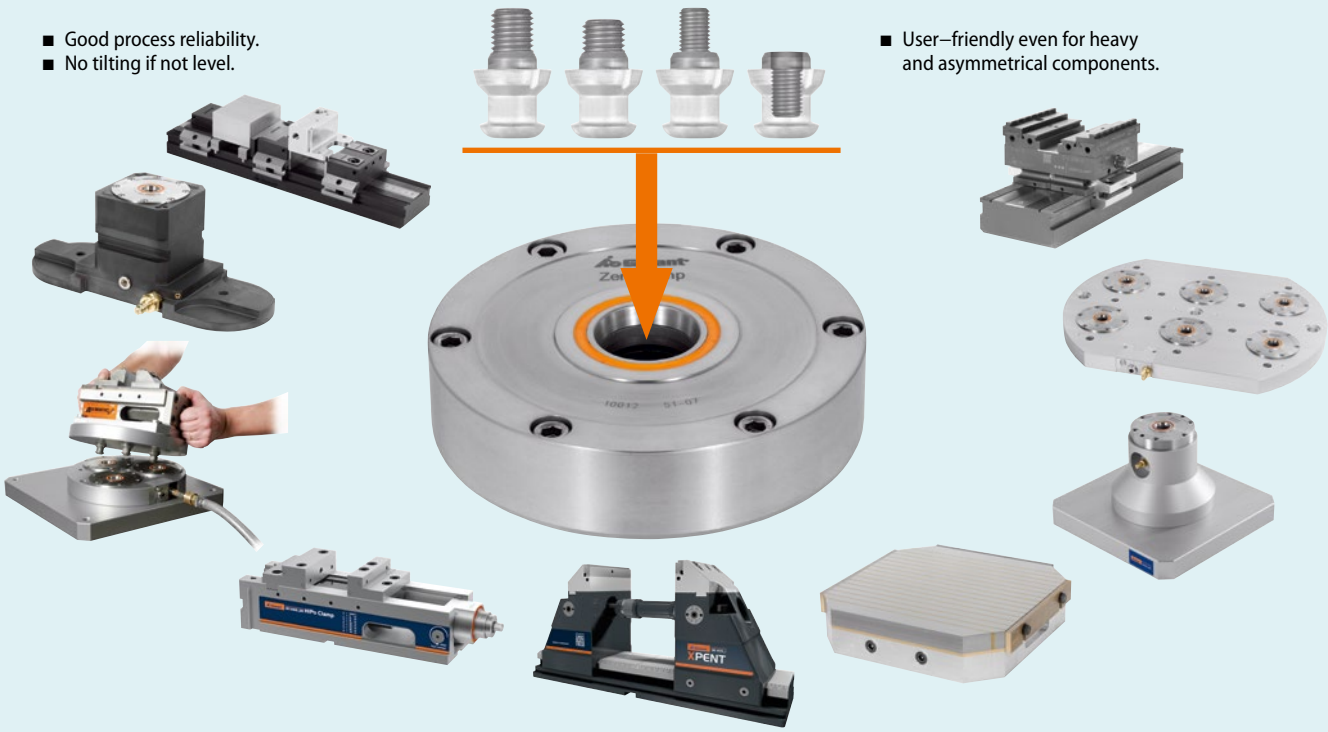
One base – one type of pin – very great flexibility

The zero point clamping system for a wide range of applications.

From standard applications through to automation with just a single type of pin

- Good process reliability.
- No tilting if not level.

- User–friendly even for heavy and asymmetrical components.



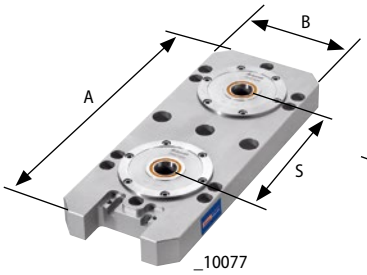
Garant ZeroClamp, standard clamping system

All bores for T-slot pitches of **63, 100, 125 mm.**
Centre bore ∅ 25 H7 to receive a centring set.

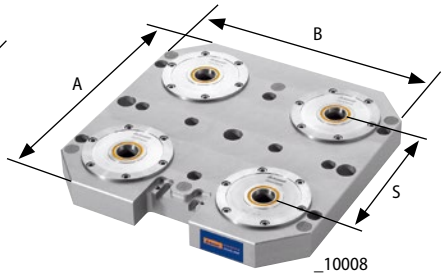
Material: **Base plate** of high-tensile aluminium, surface treated.
All components of the clamping pot of stainless or corrosion-resistant steel.

Application: For vertical/horizontal machines.

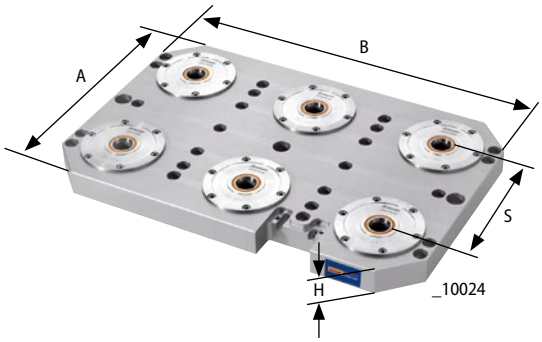
Optional extras: Clamping stud No. 360025,
Connection block No. 360017 size 12808 / 12805.



_10077



_10008



_10024

Type		10077	10008	10024	11058
310 36 0012	ZeroClamp base plate	(XXX)	(XXX)	(XXX)	(XXX)
Clamping pot ∅	mm	120			
Number of clamping pots		2	4	6	8
B	mm	166	366	566	766
A	mm	416	366	366	366
H	mm	44			
Pitch S	mm	200			

Type		21782	21521	25438	25440
310 36 0012	ZeroClamp base plate	(XXX)	(XXX)	(XXX)	(XXX)
Clamping pot ∅	mm	138			
Number of clamping pots		2	4	6	8
B	mm	196	396	596	796
A	mm	446	396	396	396
H	mm	54			
Pitch S	mm	200			

Garant Cover plates for base plates

The cover plates are made of 1 mm stainless steel 1.4301 for covering the base units.
(Surface protection + cover for location holes.)

_11356

_11355

_11396

Type		11356	11355	11354	11396
310 36 0013	ZeroClamp cover plate for base plate	(XXX)	(XXX)	(XXX)	(XXX)
suitable for base plate 360012		Size 10077	Size 10008	Size 10024	Size 11058

Type		21872	24311	25449	25442
310 36 0013	ZeroClamp cover plate for base plate	(XXX)	(XXX)	(XXX)	(XXX)
suitable for base plate 360012		Size 21782	Size 21521	Size 25438	Size 25440

Garant ZeroClamp, adapted clamping system for 3/5-axis machines (according to machine type)

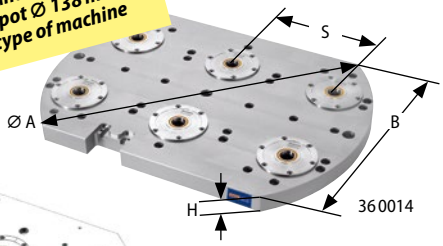
Centre bore ∅ 25 H7 to take the centring set.

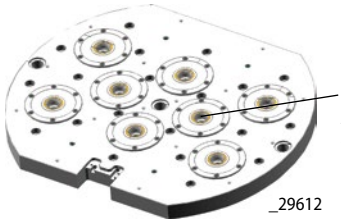
Material: **Base plate** of high-tensile aluminium, surface treated. All components of the clamping pot of stainless or corrosion-resistant steel.

Optional extras: Clamping stud No. 360025, connection blocks No. 360017 size 12808 / 12805.

Note: Depending on the machine type, the arrangement may differ from that in the illustration.

Individual solutions and special sizes, even for clamping pot ∅ 138 mm, available for any type of machine





Base with diagonal dimension for higher support torque and other clamping applications (centre)

_29612

Type		14014	29601	29607	10089	10477	29612	29598	10009	29595	29614
310 360014	ZeroClamp base plate (depending on the machine type / machine table)	(XXX)	(XXX)	(XXX)	(XXX)	(XXX)	(XXX)	(XXX)	(XXX)	(XXX)	(XXX)
suitable for machine type		MAZAK VARIAX 500	DMG DMU 40 eVo	Hermle C12 / 22 / 250	DMG DMU 50	Mazak Variax 630	Hermle C 32	DMG DMU 60eV0	DMG DMU 80P	DMG DMU 80 eVo	Hermle C42
Clamping pot ∅	mm	120									
Number of clamping pots		4	4	4	6	6	8	8	12	13	13
∅ A	mm	500	480	330	630	630	650	630	900	830	800
B	mm	400	400	–	500	500	540	500	630	700	630
H	mm	44									
Pitch S	mm	200									

Garant Cover plates for base plates (based on machine type)

The cover plates are made of 1 mm stainless steel 1.4301 for covering the base units. (Surface protection + cover for location holes.)

360021_18290

360021_11648

Type		18290	29605	29611	11648	29610	29606	12452	29604	29609
310 360021	ZeroClamp cover plate for base plate	(XXX)	(XXX)	(XXX)	(XXX)	(XXX)	(XXX)	(XXX)	(XXX)	(XXX)
suitable for base plate 360014		Size 14014	Size 29601	Size 29607	Size 10089 / 10477	Size 29612	Size 29598	Size 10009	Size 29595	Size 29614

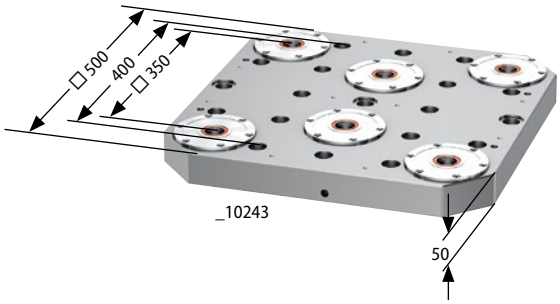
Garant ZeroClamp base plates / clamping towers

Clamping pot ∅ **120 mm**.

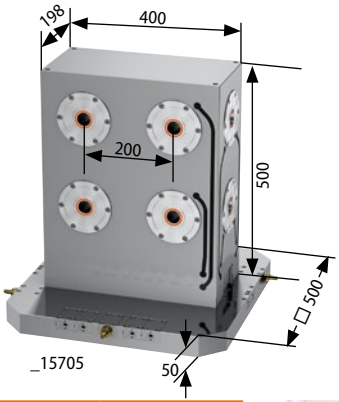
Size 10243 – Base plate with 6 clamping pots, to accept the clamping towers. Drilled for T-slots at 100 mm intervals, centre hole ∅ 25 H7 to accept a centring set.

Size 15705; 10397 – Clamping tower is mounted on base plate size 10243. Clamping towers are equipped laterally with clamping pots that can be individually activated and indexed.

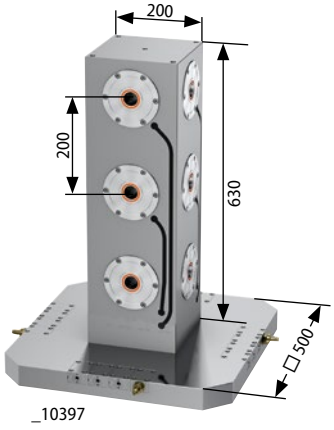
Optional extras: Clamping stud No. 360025.



_10243

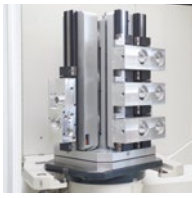


_15705



_10397

Type		10243	15705	10397
310 360022	ZeroClamp 6-pot base plate or clamping towers for horizontal machines	(XXX)	(XXX)	(XXX)
Number of clamping pots		6	12	12
Pitch S	mm	350 (4×), 200 (2×)	200	200



Garant ZeroClamp extension bases / adapters

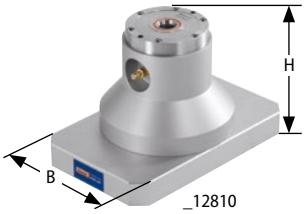
1-pot extension bases

Clamping pot ∅ **120 mm**, indexed.

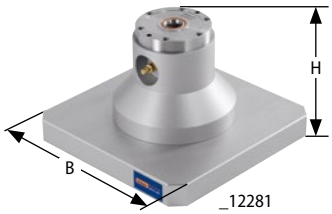
Suitable for: For base plates with pitch 200.

Supplied with: Including coupling plug and clamping stud No. 360025 size 18M16.

Optional extras: Quick-release coupling No. 360019 size 10241 / 10003.



_12810



_12281

Type		19619	12809	12810	12811	14617	12281
310 36 0030	ZeroClamp extension base with 1 clamping point	(XXX)	(XXX)	(XXX)	(XXX)	(XXX)	(XXX)
B	mm	198	198	198	330	330	330
H	mm	120	150	200	150	100	200
Number of clamping studs		2	2	2	4	4	4
Connection thread	inch	1/8	1/8	1/4	1/8	1/8	1/4

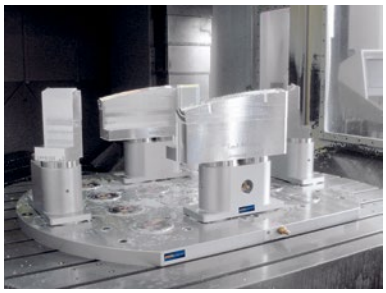
2-pot extension bases

With 2 clamping pots.

Suitable for: For base plates with pitch 200.

Supplied with: Including coupling plug and clamping stud No. 360025 size 18M16.

Optional extras: Quick-release coupling No. 360019 size 10003.



_12732

_12736

Type		12813	12814	12815	12816	12732	12735	12736	12126	14523	25067	21033
310 36 0031	ZeroClamp extension base with 200 pitch	(XXX)	(XXX)	(XXX)	(XXX)	(XXX)	(XXX)	(XXX)	(XXX)	(XXX)	(XXX)	(XXX)
Clamping pot ∅	mm	120	120	120	120	120	120	120	120	120	138	138
H	mm	70	100	120	160	200	160	200	150	150	120	200
Number of clamping studs		2	2	2	2	2	4	4	2	4	2	2

Angled extension base, 2-pot

Application: For mounting in base plates with 200 mm pitch.
Can be clamped at 45° and 90°.

Supplied with: With clamping stud No. 360025 size 18M16.

Optional extras: Clamping stud No. 360025 size 18M16.
Connection block No. 360017 size 12808 / 12805.

36 0034

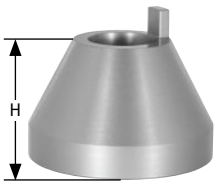
Type		10035
310 36 0034	ZeroClamp angled extension base with 200 mm pitch	(XXX)
Reference dimension	mm	200
Clamping pot ∅	mm	120
H	mm	230
Number of location holes for clamping studs		4

SK40 adapters

Suitable for: Clamping pots ∅ 90, ∅ 120 or ∅ 138 mm with indexing hole.

Application: Can be used horizontally and vertically. Clamping workpieces via an SK40 (DIN 69871) tool arbor (such as ER, OZ etc.). Clamping studs are bolted through the adapter from below to secure the arbor. Especially suitable for small, delicate or round workpieces.

Note:
Clamping stud No. 360025 size 14M12/90 for ∅ 90 mm.
Clamping stud No. 360025 size 18M12 for ∅ 120 mm.
Clamping stud No. 360025 size 18M12/138 for ∅ 138 mm.
Must be ordered separately!



36 0042

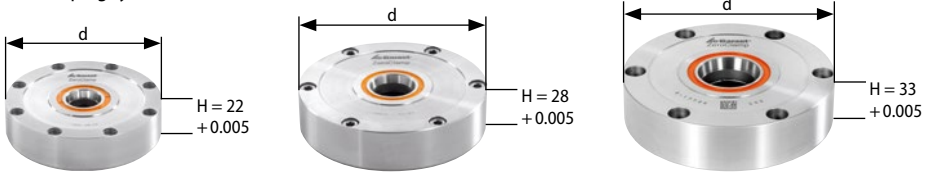
suitable for clamping pot ∅	mm	90	120	138
310 36 0042	ZeroClamp adapter for SK40 (DIN 69871) arbors	(XXX)	(XXX)	(XXX)
H	mm	77		
Number of location holes for clamping studs		1		

Garant ZeroClamp zero-point clamping system – Accessories

Clamping pots

All components made of stainless or corrosion-resistant steel.

Application: For individual incorporation in the clamping system.



Type			11886/90	12987/90I	10012	10148	138	138I
310 36 0040	ZeroClamp clamping pot		XXX	XXX	XXX	XXX	XXX	XXX
Holding force		kN	12.5	12.5	25	25	40	40
Clamping pot ∅ d		mm	90	90	120	120	138	138
Indexing hole available			No	yes	No	yes	No	yes

Closure stud

36 0029 – Circular cover with seal covers the complete clamping pot including the closure stud.

Application: To protect unused clamping points against dirt and swarf.

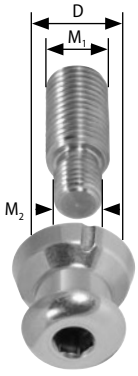
Clamping pot ∅		mm	90C	120C	138C	90	120	138
310 36 0029	Closure stud		XXX	XXX	XXX	–	–	–
310 36 0035	ZeroClamp original closure stud		–	–	–	XXX	XXX	XXX

Clamping studs

With internal thread including a suitable threaded pin.

Type			12M10/90	14M12/90	16M8	16M10	18M12	12M10	18M16	25M10
310 36 0025	ZeroClamp clamping stud with internal thread		XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
∅ D		mm	12k6	14k6	16k6	16k6	18k6	12k6	18k6	25h6
M_1			M10	M12	M8	M10	M12	M10	M16	M10
M_2			M8	M8	M8	M10	M12	M10	M12	M10
suitable for clamping pot ∅		mm	90	90	120	120	120	120	120	120

Type			12M10/138	18M12/138	25M10/138	25M16/138	18M16/138
310 36 0025	ZeroClamp clamping stud with internal thread		XXX	XXX	XXX	XXX	XXX
∅ D		mm	12k6	18k6	25h6	25k6	18k6
M_1			M10	M12	M10	M16	M16
M_2			M10	M12	M16	M16	M12
suitable for clamping pot ∅		mm			138		

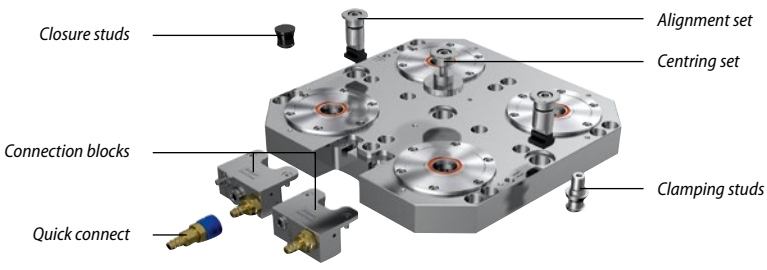


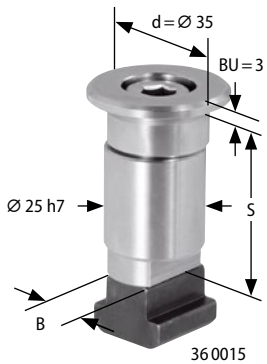
36 0025

Alignment sets

Application: For parallel alignment in the T-slots.

Slot width B / Clamping thickness S		mm	10/40	12/40	14/40	14/50	16/40	18/40	22/40
310 36 0015	ZeroClamp alignment set		(XXX)	(XXX)	(XXX)	(XXX)	(XXX)	(XXX)	(XXX)



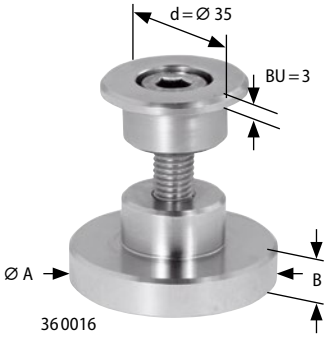


36 0015

Centring set

Application: For centralised alignment in the centre bore.
For basic units with 40 - 50 mm thickness.

Centring ∅ A / Centring height B		mm	30/10	32/10	50/10	50/20
310 36 0016	ZeroClamp centring set		(XXX)	(XXX)	(XXX)	(XXX)



36 0016

Connection blocks

Size 12805 – With one connection thread G 1/4 inch for connecting the compressed air.
The connection block has a manual valve for releasing, clamping, and also blowing out.

Size 12808 – With 2 connection threads G 1/4 inch for the connection of release and blow-out air hoses.

Type		12808	12805
310 36 0017	ZeroClamp connection block	(XXX)	(XXX)

Quick-release coupling nipple

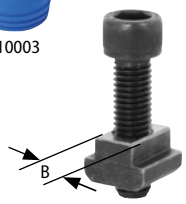
310 36 0018	ZeroClamp quick-release coupling nipple	(XXX)
Connection thread	inch	1/4

Quick-release couplings

Type		10241	10003
310 36 0019	ZeroClamp quick-release coupling	(XXX)	(XXX)
Connection thread	inch	1/8	1/4

T–nut with clamping screw

Socket-head screw with hexagon socket to DIN912, strength class 12.9.



Slot width B / clamping thickness S	mm	12/40	14/40	16/40	18/40	22/40	12/50	14/50	16/50	18/50	22/50
310 36 0024	T–nut with clamping screw	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
M		M10	M12	M14	M16	M20	M10	M12	M14	M16	M20
Clamping screw length	mm	45	45	50	50	55	55	55	60	60	65

Clamping pot starter kit

All components made of stainless or corrosion-resistant steel.

Application: For individual incorporation in the clamping system.

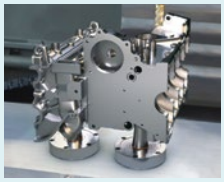
Supplied with: Each with 4 clamping pots.
10 × adapters for the air line.
1.5 m air line.
1 × quick-release coupling No. 360019 size 10003.
1 × male coupling (suitable for quick-release coupling).

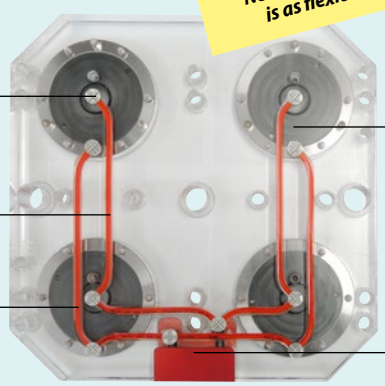
Note: Supplied with drawings and installation instructions for configuring your own clamping system.
2-component epoxy resin may be used to fill in the milled slots.

Type		10012-SET	10148-SET	138-SET	138I-SET
310 36 0040	ZeroClamp clamping pot	(XXX)	(XXX)	(XXX)	(XXX)
Clamping pot No. 360040		10012	10148	138	138I
Clamping pot ∅ d	mm	120	120	138	138
Indexing hole available		no	Yes	no	Yes

Unique advantages:

- Individual fitting
- Adaptation to special needs
- Virtually limitless applications
- User-selected variable pitch
- Cost-effective solution
- Especially versatile for jig and tool making



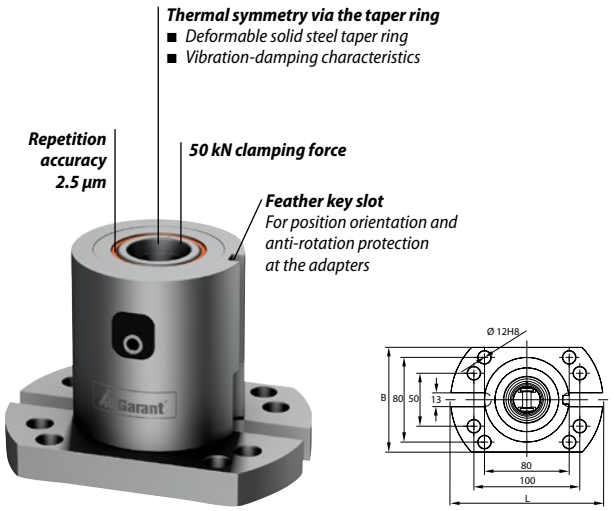


Flexible clamps

- Steel base body with integral solid steel taper.
- Mechanical clamping mechanism.
- Tightening the lateral clamping bolt axially draws the component in with the respective clamping stud via 2 clamping wedges, and clamps it.
- Can be secured using steplessly adjustable clamps, T-nuts or zero point clamping system using clamping studs No. 360066.
- Pre-drilled for the zero point clamping system.

Application: Simple and exact positioning on the machine table. Clamping of complex components, e.g. For mould making.

Optional extras: Clamping stud No. 360025 for size 120, torque wrench No. 656050 size 60, height element No. 360068.



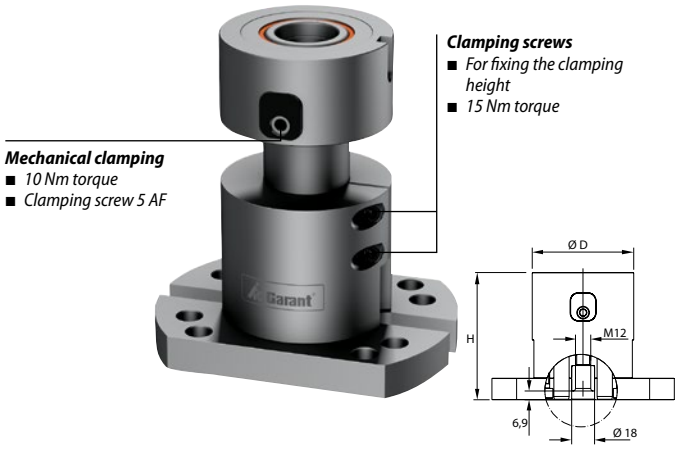
Flexible clamp fixed

Type			1	2
310 36 0060	Fixed flexible clamp		(XXX)	(XXX)
Ø D		mm	80	
L		mm	144	
B		mm	99	
H		mm	100	125
Torque		N·m	10	

Flexible clamp, variable

Height adjustment with 3 mm lead per turn. Maximum travel 25 mm.

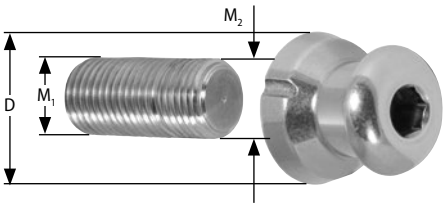
Application: For compensating deformed components.



Type			1	2
310 36 0064	Flexible clamp, variable		(XXX)	(XXX)
Ø D		mm	80	
L		mm	144	
B		mm	99	
Torque		N·m	10	
Clamping height		mm	125 – 150	150 – 175

Clamping studs for flexible clamp

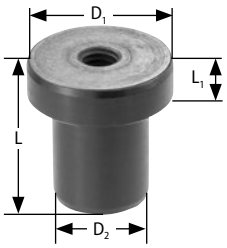
Type			18M12	18M12/138
310 36 0066	ZeroClamp clamping stud		(XXX)	(XXX)
Ø D		mm	18K6	
M_1			M12	
M_2			M12	
suitable for clamping pot Ø		mm	120	138



Centring stud for centring on grid plates

Suitable for: Flexible clamps No. 360060 and 360064

Application: For centring the flexible clamp on grid pallets. Attachment by bolts through the flexible clamp base plate.



Type			18K6/12K6
310 36 0067	ZeroClamp centring stud		(XXX)
Ø D_1		mm	18k6
Ø D_2		mm	12k6
L		mm	19
L_1		mm	5

Height element

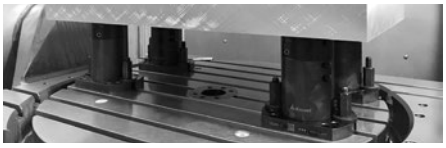
Suitable for: Flexible clamps No. 360060 and 360064.

Application: For extending the flexible clamp. Up to 5 height elements adaptable one over another.

Supplied with: Anti-rotation protection and clamping stud No. 360131 18M12/120.

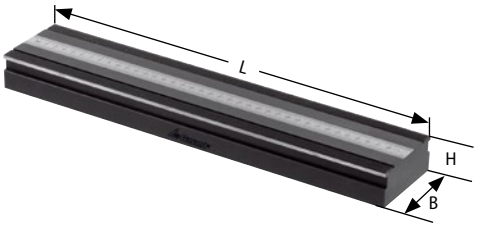
Optional extras: Clamping stud No. 360025 for size 120. Torque wrench No. 656050 size 60.

Type			1
310 36 0068	Height element		(XXX)
Ø D		mm	80
H		mm	50
Torque		mm	10



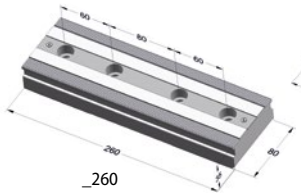
Garant Multi-point clamping rails 80 mm - accessories

- All functional faces precision ground, pairing accuracy 0.03 mm.
- Base rail and jaws case hardened.
- Compact modular design, **high clamping force up to 20 kN,** maximum tightening torque 25 Nm.
- Attachment hole pattern for **GARANT ZeroClamp zero point clamping system** (200 mm pitch) as standard, can be mounted on clamping plates or matrix tables, or using table clamps.
- Ruler inset into the top face permits repeatable positioning of the clamp attachments in the serrations of the clamping rail.
- Easily clamped using a torque wrench.



Application:
- **5-face machining on multi-axis machining centres.**
- As a cost-effective clamping solution for use with the GARANT ZeroClamp zero-point clamping system or with pallet and automated systems, or directly on to the machine table or clamping towers.

Optional extras: Clamping jaw variants, magnetic strip, workpiece backstops see No. 360084 to 360096. Torque wrench No. 656050 size 60, clamping stud No. 360025 size 12M10, clamp No. 360127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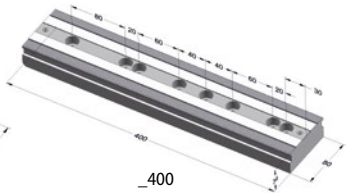
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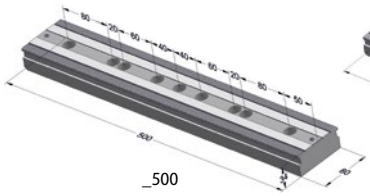
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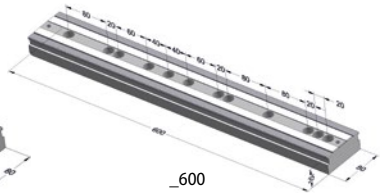
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Beam length	mm	260	400	500	600
310 36 0080 Multi-point clamping rail		XXX	XXX	XXX	XXX
L	mm	260	400	500	600
B	mm	80			
H	mm	35			

Accessories

Suitable for: Clamping rail No. 360080.
Application: Variable pitches can be achieved using crossed clamping rails.

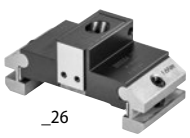
Note: For use with clamping rails from revision 3 onwards (see illustration)! Attachment bar on multi-point clamping rails must not be wider than 5 mm.

36 0082

310 36 0082 Cross connector		(XXX)

Suitable for: Clamping rail No. 360080.
Application: Variable pitches can be achieved using crossed clamping rails.

Note: For use with clamping rails from revision 3 onwards (see illustration)! Attachment bar on multi-point clamping rails must not be wider than 5 mm.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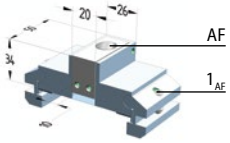

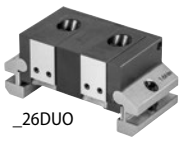
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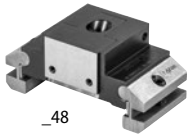
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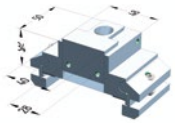
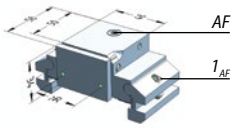


Jaw width	mm	26	26DUO	48	80
310 36 0084 Pull-down jaw		XXX	XXX	XXX	XXX
Clamping force	kN	5; 10; 15; 20			
Torque	N·m	6; 12; 17.5; 25	6; 8; 10; 14	6; 12; 17.5; 25	6; 12; 17.5; 25
max. stroke	mm	3			
T-bolt AF	mm	6			
Shank screw AF_1	mm	4			

Suitable for: Clamping rail No. 360080.
Application: Variable pitches can be achieved using crossed clamping rails.

Note: For use with clamping rails from revision 3 onwards (see illustration). Attachment bar on multi-point clamping rails must not be wider than 5 mm.

_48



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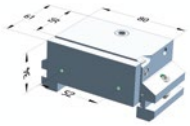
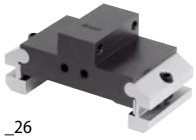


Jaw width	mm	48	80
310 36 0085 Parallel clamping jaw		XXX	XXX
Clamping force	kN	5; 10; 15; 20	
Torque	N·m	5; 10; 15; 20	
max. stroke	mm	3	3.5
T-bolt AF	mm	5	
Shank screw AF_1	mm	4	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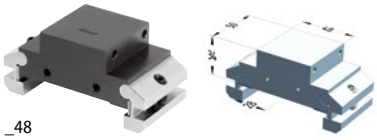
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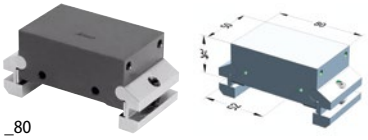
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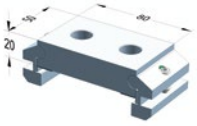
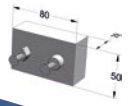
Jaw width	mm	26	48	80
310 36 0086	Fixed jaw	XXX	XXX	XXX

36 0088

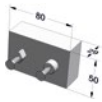


Jaw width	mm	80
310 36 0088	Base jaw	XXX

Suitable for: No. 360088 size 80
Application: For clamping individual workpiece contours.



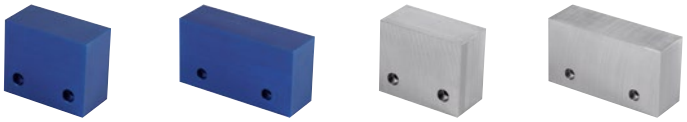
36 0089_ALU



36 0089_STAHL

Material		ALU	STAHL
310 36 0089	Top jaw	XXX	XXX

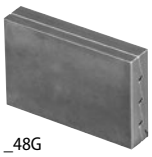
Suitable for: Parallel clamping jaw No. 360085 and fixed jaw No. 360086.
Application: For clamping individual workpiece contours.



Jaw width / Material	mm	48ALU	80ALU	48STAHL	80STAHL
310 36 0090	Front jaw	(XXX)	XXX	(XXX)	XXX
Length	mm	58	90	58	90
Height	mm	49			
Width	mm	29			

Suitable for: No. 360084 / 0085 / 0086.
Application: Prevents removal of the component and ensures contact seating.

Jaw width mm	310 36 0096 Pull-down front jaw	Version
48G	(XXX)	Smooth
80G	(XXX)	Smooth
48HM	(XXX)	Carbide coated
80HM	(XXX)	Carbide coated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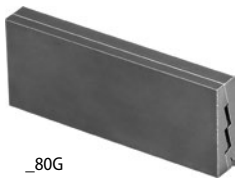
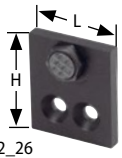
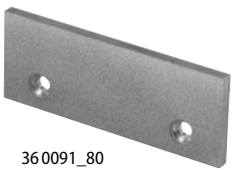

_80G

Suitable for:
36 0091/0092 Size 48P – No. 360085 size 48
36 0091/0092 Size 48NF – No. 360084 size 48, 360086 size 48
36 0091 Size 26; 80/36 0092 Size 80ST – No. 360084 / 0085 / 0086



36 0092_26


36 0091_80

Jaw width mm	310 36 0091 Carbide coated front jaw	310 36 0092 Gripper front jaw
26	(XXX)	XXX
48P	(XXX)	(XXX)
48NF	XXX	(XXX)
80	XXX	XXX
80ST	–	XXX

36 0092_80ST

36 0092_80

Jaw width / jaw height mm	310 36 0093 Magnetic strip
74/10	XXX
74/15	XXX
74/20	XXX
74/25	XXX
74/30	XXX
94/10	(XXX)
94/15	XXX

36 0093_74/15

36 0093_74/30

36 0093_94/15

Version	310 36 0094 Component backstop	Version
F	XXX	fixed
V	XXX	adjustable
M	XXX	magnetic

_F

_V

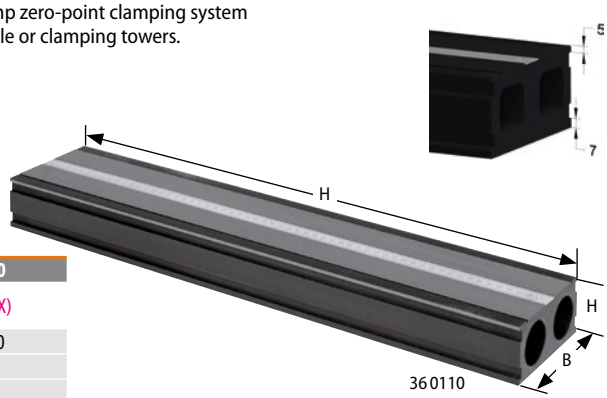
_M

Multi-point clamping rails 120 mm - accessories

- All functional faces precision ground, pairing accuracy 0.03 mm.
- Base rail and jaws case hardened.
- Compact modular design, **high clamping force up to 40 kN,** maximum tightening torque 50 Nm.
- Attachment hole pattern for **GARANT ZeroClamp zero-point clamping system** (reference dimension 200 mm) as standard, can be mounted on clamping plates or matrix tables, or using table clamps.
- Ruler inset into the top face permits repeatable positioning of the clamp attachments in the serrations of the clamping rail.
- Variable pitches can be achieved using cross connectors.
- Conventional and Gripp clamping available.
- Clamping range can be extended individually.
- Easily clamped using a torque wrench.

Application:
- **5-face machining on multi-axis machining centres.**
- As a cost-effective clamping solution for use with the GARANT ZeroClamp zero-point clamping system or with pallet and automated systems, or directly on to the machine table or clamping towers.

Optional extras: Clamping jaw variants, magnetic strip, workpiece backstop see No. 360112 to 360129. Torque wrench No. 656050 size 60, clamping stud No. 360025 size 18M16, clamp No. 360127.

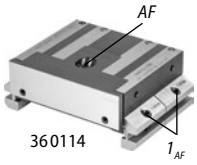


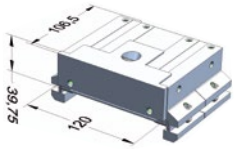
Beam length	mm	300	600	800
310 36 0110	Clamping rail 120	XXX	XXX	(XXX)
L	mm	300	600	800
B	mm	120		
H	mm	60		

Accessories

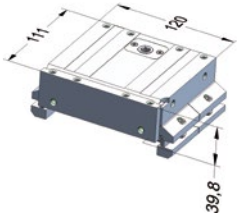
Note: Torque and clamping force are standard values and are only indicative reference points (material-dependent).

Jaw width	mm	120
310 36 0114	Pull-down jaw	XXX
Clamping force	kN	10; 20; 30
Torque	N·m	17; 30; 50
max. stroke	mm	4
T-bolt AF	mm	8
Shank screw AF_1	mm	4

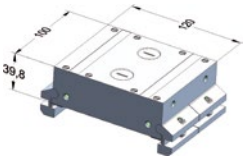




Jaw width	mm	120
310 36 0115	Parallel clamping jaw	XXX
Clamping force	kN	10; 20; 30; 40
Torque	N·m	10; 20; 30; 40
max. stroke	mm	4
T-bolt AF	mm	8
Shank screw AF_1	mm	4



Jaw width	mm	120
310 36 0116	Fixed jaw	XXX



Suitable for: Base jaw No. 360119.

Application:

Size BLIND – Sealing plug set for closing off the holes.

_GLATT-HM

_GRIPP-1.8

_GRIPP-3.8

Type		GLATT-HM	GRIPP-1,8	GRIPP-3,8	BLIND
310 36 0118	Gripp insert	XXX	XXX	XXX	(XXX)
Height	mm	5.5	1.8	3.8	15
Version		Smooth	Gripp	Gripp	Blind
Quantity		1	1	1	4

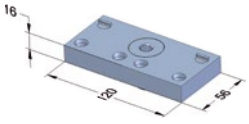
_BLIND

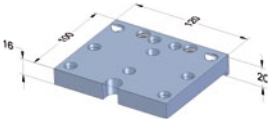
Suitable for: No. 360119 size P – No. 360116 size 120.
No. 360119 size F – No. 360115 size 120.

Application: Conventional clamping – or clamping with grip inserts.

Supplied with: 2 gripp inserts No. 360118 GRIPP-3.8.

360119_P

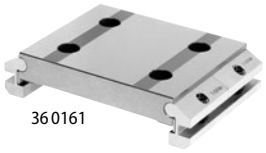


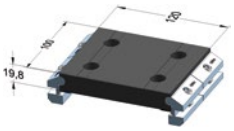


Type		P	F
310 36 0119	Base jaw	XXX	XXX
Function		pivoting	fixed

Suitable for: Clamping rail No. 360110.

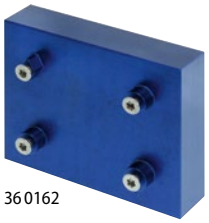
Jaw width	mm	120
310 36 0161	Base jaw	XXX

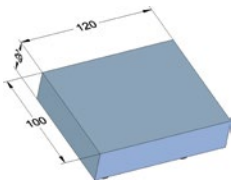

360161



Suitable for: No. 360161 size 120.
Application: For clamping individual workpiece contours.

Material		ALU	STAHL
310 36 0162	Top jaw	XXX	XXX

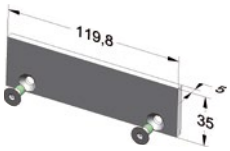

360162



Suitable for: Pull-down jaw No. 360114, parallel clamping jaw No. 360115, and fixed jaw No. 360116.

Jaw width	mm	120
310 36 0124	Carbide coated front jaw	XXX

360124

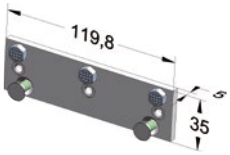


Suitable for:
Size 120 – Pull-down jaw No. 360114, parallel clamping jaws No. 360115, and fixed jaw No. 360116.
Size 120ST – No. 360115 / 0116.

Jaw width	mm	120	120ST
310 36 0125	Gripper front jaw	(XXX)	XXX

360125_120 ST

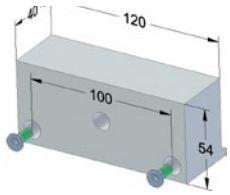
360125_120

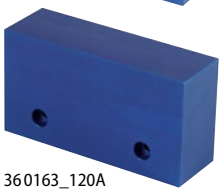


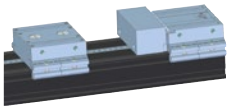
Suitable for: Parallel clamping jaw No. 360115 and fixed jaw No. 360116.
Application: For clamping individual workpiece contours.

Jaw width	mm	120	120A	120S
310 36 0122	Aluminium top jaw	(XXX)	–	–
310 36 0163	Front jaw	–	(XXX)	(XXX)
Version		Aluminium	Aluminium	Steel

360122




360163_120A



Suitable for: No. 360114 / 0115 / 0116.
Application: Prevents lifting of the component and ensures a flat face contact seating.

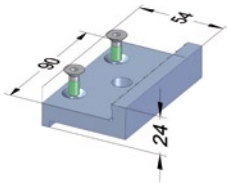
Jaw width	mm	120G	120HM
310 36 0129	Pull-down front jaw	(XXX)	(XXX)
Version		Smooth	Carbide coated

360129_120G

Suitable for: Parallel clamping jaw No. 360115 and fixed jaw No. 360116.

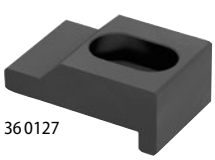
Jaw width	mm	90
310 36 0123	Top jaw	XXX

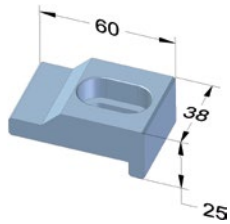
360123



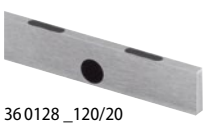
Suitable for:
360127 – Clamping rail No. 360110.
Application:
360127 – For conventional fastening to the machine table.

310 36 0127	Pack of clamps **6 pieces**	XXX


360127



Jaw width / jaw height	mm	120/10	120/20	120/30	120/38
310 36 0128	Magnetic strip 6 mm thick	XXX	XXX	XXX	XXX


360128 _120/20

360128 _120/38

Garant Centring vice and accessories

Centring vice for flexible applications.

- Absolute operational reliability thanks to enclosure.
- High repetition accuracy 0.02 mm.
- Variable central alignment ±0.02 mm.
- User-friendly design, versatile range of jaws.
- Functional faces hardened.
- Sturdy design of tool steel, surface protection by brief exposure nitriding.

Advantage:
- Flexible lightweight.
- Multi-functional use.

360130 – Clamping rail (80 mm or 120 mm, extension base or clamping pots (Ø 90 for size 80 and Ø 120 or 138 for size 120: pre-prepared connection hole).

360133 – Directly on the machine bed, exchange pallets or extension base (360156).

Application: Ideal for 5-face machining, perfect for clamping blank parts. Extremely versatile, wide range of applications: Pallet and automated systems, multiple clamping for instance on clamping rails, individual clamping on extension bases or directly on the machine.

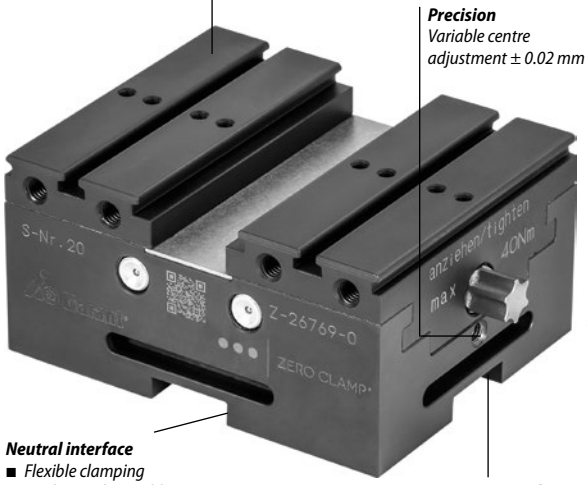
Supplied with: Socket insert No. 642700 E12.

360133 – 2 table clamps.

Optional extras: For clamping jaw variants see No. 360135 to 360148.

360130 – Extension base; No.360152 or 360154, centring/adaptor plate No. 360132 is required to mount the centring vice on the clamping pots (spare parts list), special clamping studs 360131 (for 360130).

360133
on the three-way extension base



Powerful
Clamping force up to 17 KN (size 80) or 25.5 kN (size 120)

Precision
Variable centre adjustment ± 0.02 mm

360133

Neutral interface
- *Flexible clamping on the machine table*
- *Extension bases or pallets*
- *Grid plates*

Precise location slots
Quick placement on the table or grid plate

Form fit *of the jaws on the base body*

360130

GARANT centring vices with soft jaws (for specific contours)

Flexible base
suitable for
- *Multi-point clamping rail 80 mm or 120 mm*
- *Clamping pot Ø 90 for size 80, Ø 120 or 138 for size 120.*
- *Extension bases*

Quick change
with just a few simple movements, can be turned through 90°.

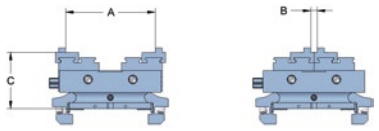
Jaw width A	310 360130	310 360133	Clamping force up to maximum	Torque	Weight	Stroke	A	Length	Width	Height
	Centring vice	Neutral centring vice								
mm			kN	N·m	kg	mm	mm	mm	mm	mm
80	XXX	XXX	17	40	2.5	22	80	114	80	51.4
120	XXX	XXX	25.5	60	5.1	25	120	130	120	51

Garant Centring vice and accessories

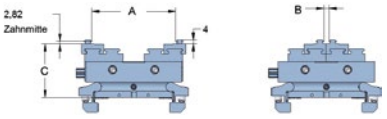
Top jaws for centring vices

Material: Tool steel with brief exposure nitriding.
Supplied with: Fastening screw.

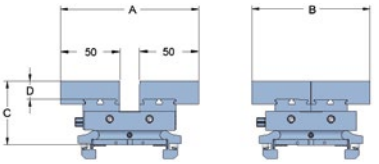
360135/0136

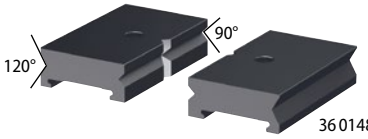


360140/0141

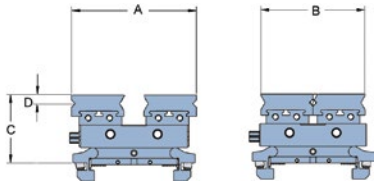


360145/0146

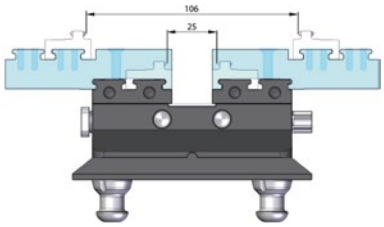




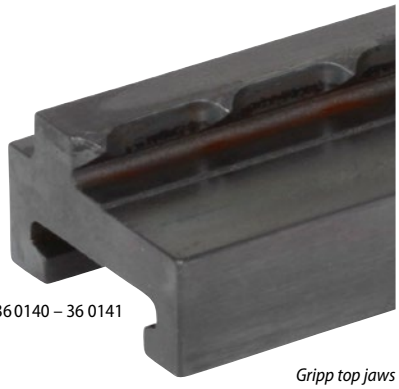
360148



360151



360135 – 360136
Carbide top jaws


360140 – 360141
Gripp top jaws

360145 – 360146
Soft top jaws

Application:

360151 – For increasing the clamping range, in combination with the top jaws No. 360135 - 360141.

for type		80	120
310 36 0151	Jaw adapters	XXX	XXX
b	mm	80	120
Clamping range	mm	87 – 168	107 – 208

for type		80	120
310 36 0148	Pair of Vee jaws	XXX	XXX
Clamping range B - A	mm	3.6 – 25	
C	mm	56.95	57
D	mm	15	
Clamping ∅ 90°	mm	6 – 8	8 – 22
Clamping ∅ 120°	mm	6 – 8	8 – 26

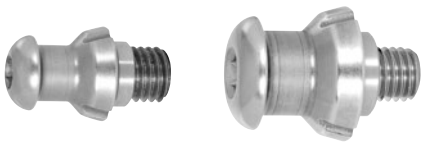
for type		80	120
310 36 0135 / 310 36 0136	Pair of carbide top jaws		
Jaw width b	mm	80	120
Clamping range B - A (36 0135)	mm	7 – 88	7 – 107
Clamping range B - A (36 0136)	mm	88 – 108	106 – 132
C (36 0135)	mm	54.95	57
C (36 0136)	mm	57.95	60

for type		80	120
310 36 0140	Pair of gripp top jaws		XXX
310 36 0141		XXX	XXX
310 36 0145	Pair of soft top jaws	XXX	XXX
310 36 0146		XXX	XXX
Jaw width b	mm	80	120
Clamping range B - A (36 0145)	mm	100 – 123	125 – 153
Clamping range B - A (36 0146)	mm	130 – 153	155 – 183
Clamping range B - A (36 0140)	mm	6 – 87	6 – 107
Clamping range B - A (36 0141)	mm	87 – 107	107 – 132
C (36 0145, 36 0146)	mm	49.95	50
C (36 0140)	mm	54.95	57
C (36 0141)	mm	57.95	60
D (36 0145, 36 0146)	mm	20	25

Clamping studs for centring vice

With internal thread including a suitable threaded pin.

Type		14M12/90	18M12/120	18M12/138
310 36 0131	Clamping stud for centring vice	XXX	XXX	XXX
for type		80	120	120
Centre ∅	mm	14	18	18
for clamping pot ∅	mm	90	120	138
M_1		M12		



_14M12/90 36 0131

Extension base for centring vice

With holes for clamping studs No. 360025 18M16. Alternative attachment via stepless adjustable clamps or an M12 bolt in the T-slot. Attachment hole pattern for **GARANT ZeroClamp zero-point clamping system** (pitch 200 mm).

Suitable for: Centring vice No. 360130.

Material: Steel

Application:
- **5-face machining on multi-axis machining centres.**
- As a cost-effective clamping solution for use with the GARANT ZeroClamp zero-point clamping system or with pallet and automated systems, or directly on to the machine table.

for type		80	120
310 36 0152	Extension base for centring vice	XXX	XXX
Length	mm	250	
Width	mm	120	
Height	mm	125	
Clamping studs reference dimension	mm	200	
Number of location holes for clamping studs		2	

Extension base with clamping pot for mounting the centring vice

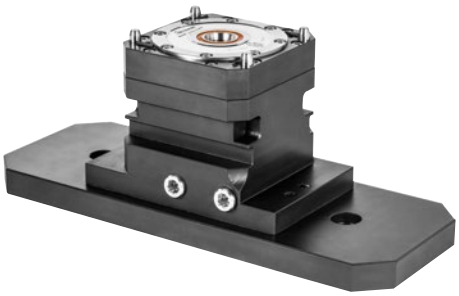
With holes for clamping studs No. 360025 18M16. Alternative attachment via stepless adjustable clamps or an M12 bolt in the T-slot. Attachment hole pattern for **GARANT ZeroClamp zero-point clamping system** (pitch 200 mm). Manual operation or air cushion movement across the machine table.
Clamping pot with ∅ 90 mm or 120 mm for mounting the centring vice No. 360130.

Suitable for: Centring vice No. 360130 in combination with centring/adapter plate No. 360132.

Material: Steel

Application:
- **5-face machining on multi-axis machining centres.**
- As a cost-effective clamping solution for use with the GARANT ZeroClamp zero-point clamping system or with pallet and automated systems, or directly on to the machine table.

Note: Size 80/4 – size120/4 – higher support torque for maximum stability.



for type		80	120	80/4	120/4
310 36 0154	Extension base with clamping pot	(XXX)	(XXX)	(XXX)	(XXX)
Length	mm	320			
Width	mm	120	120	240	240
Height	mm	125			
Clamping studs reference dimension	mm	200			
Clamping pot ∅	mm	90	138	90	138
Number of location holes for clamping studs		2	2	4	4

3-way extension base centring vice

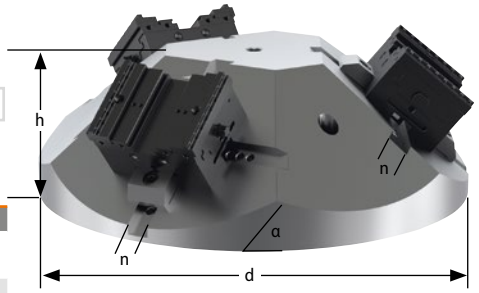
Clamping on the centring vice on the three-way extension base via table clamps. Double slot on each clamping face, so that the centring vice can optionally be displaced by 90°. The extension base is mounted on the machine table either via the GARANT ZeroClamp zero point clamping system (attachment holes and pre-prepared for pins No. 360025_18M16) or by tenons directly on to the machine table.

Suitable for: Centring vice No. 360133.

Material: High-tensile aluminium, hard anodised.

Supplied with: Including 6 T-nuts for alignment

Note: For installing the Xtric 80. Use the clamping set 363082 80. See spare parts list.

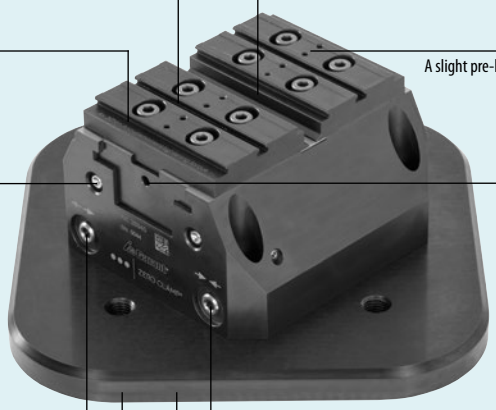


Supplied without the centring vice.

for type		80/120
310 36 0156	3-way extension base centring vice	(XXX)
∅ d	mm	400
h	mm	140
n H7	mm	20
Angle α	degrees	45

The pneumatic centring vice – powerful and universal.

Active adjustable clamp best suited for automated production. Can also be operated manually!



Precision dovetail slides

Clamping stroke up to 8.5 mm

Clamping force
steplessly adjustable up to 22.5 kN.
(Arithmetical sum = 45 kN)

Safety
A slight pre-load (approx. 60 kg) is maintained even if the compressed air supply fails.
This ensures secure positioning of the workpiece.

Grease nipples

Adjustable stroke
5 mm per side.

Air supply for clamping
Manual operation can be performed using a compressed air gun.
Maximum 9 bar.

Air supply for opening

Base plate
For 4 clamping studs (18k6 M16) pitch 200 mm.
With additional Schunk interface.

Air delivery
Air delivery in automatic mode via the
4-channel clamping pot.

Garant Pneumatic centring vice

- Adjustable stroke + 5 mm per end.
- Clamping force steplessly adjustable up to 22.5 kN. Arithmetical sum = 45 kN.
- Even if the compressed air supply fails, the centring vice maintains a slight (approx. 60 kg) pre-load, to ensure secure positioning of the workpiece, such as when a shuttle table is being used.

Size 160/4 – With base plate, for higher support torque and maximum stability.

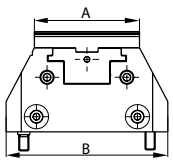
Application: For centralised clamping of components. Suitable for **automated operation** with 4-channel clamping pots, even with side connections.

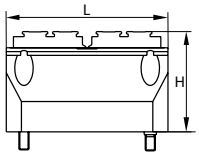
360180_160

Please order top jaws separately

360180_160/4

Type			160	160/4
310 360180	Centring vice, pneumatic		XXX	XXX
Clamping force up to maximum		kN	22.5	
Maximum compressed air supply		bar	9	
Weight		kg	12.2	22.2
Jaw width A		mm	104	
L		mm	160	
B		mm	160	
H		mm	99.2	
Clamping range		mm	8.5	





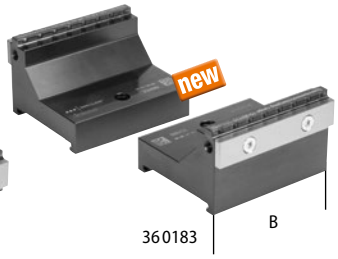
Gripp jaws

Hardened, for clamping blanks. Gripp jaws can also be used as reversible jaws.
Clamping step with a height of 4 mm.

360184 – The jaws cover four clamping ranges.

Supplied with: Fastening screws.

360184

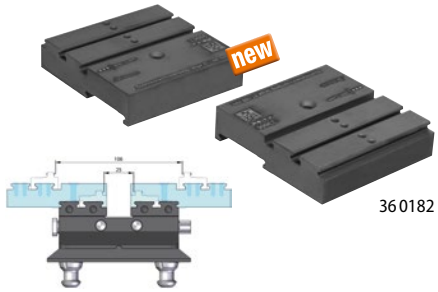


360183

Type			1	2	3	4	5	6	Jaw width A mm
310 360183	Pair of gripp jaws	H = 40	XXX	XXX	XXX	XXX	XXX	XXX	80
310 360184		H = 15	XXX	XXX	XXX	–	–	–	120
S1		mm	10 – 20	20 – 30	30 – 40	40 – 50	50 – 60	60 – 70	
S2		mm	120 – 130	110 – 120	100 – 110	90 – 100	80 – 90	70 – 80	
S3 (360184)		mm	60 – 70	50 – 60	40 – 50	–	–	–	
S4 (360184)		mm	70 – 80	80 – 90	90 – 100	–	–	–	

Jaw adapter

Application: For increasing the clamping range, in combination with the top jaws No. 360183 – 360184.

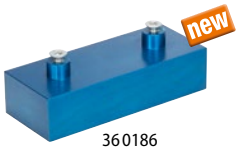


360182

for type		160
310 36 0182	Jaw adapters	XXX
Jaw width A	mm	104
Clamping range	mm	130 – 250

Soft top jaws

360185 – For mounting soft top jaws No. 360186
360186/0187 – For manufacturing shaped jaws.
Supplied with: Fastening screws.



360186

360185

Type		148	148A	148S	168	H mm
310 36 0185	Pair of base jaws	XXX	–	–	–	15
310 36 0186	Pair of soft top jaws 1/2	–	XXX	XXX	–	29
310 36 0187	Pair of soft top jaws	XXX	–	–	XXX	44
Jaw width A	mm	120				
Version		Steel	Aluminium	Steel	Steel	

360187

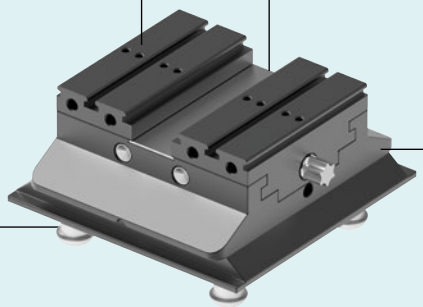
NEW: Automation vice

For use in automation.

Available on request in sizes 80 and 125

Range of jaws
- Identical to previous centring vices No. 360130 and 360133.
- Clamping of blank parts (Gripp top jaws) and finished parts (carbide top jaws).

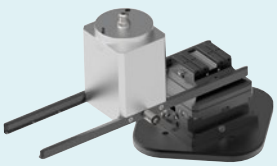
Proven technology
- Enclosed spindle - no need for cleaning.
- High clamping accuracy.
- Clamping force up to 17 kN (size 80) or 25.5 kN (size 120).



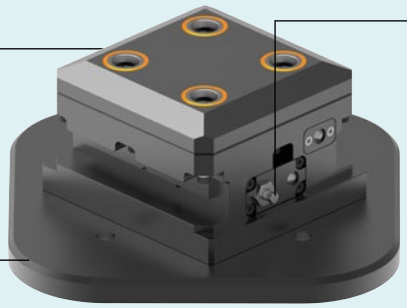
Basis
- Integral M8 tapped holes ∅ 12H7 and 80 mm pitch.

Clamping studs
- Clamping is achieved using 4 clamping studs.
- Draw-in force of 12.5 kN per stud.

Blow-out function



Bracket for automation vice
- The same principal of operation as for the clamping pots.
- Absolute zero point is maintained thanks to thermal symmetry.

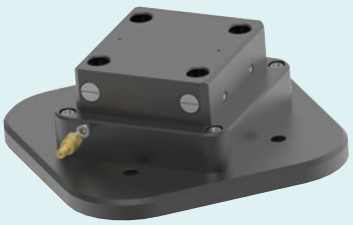


Air delivery
- This is done using the Zerobot gripper or by rotary feed-through of the machine.
- Back pressure can be checked by the gripper.

Basis
- Mounting using the zero point clamping system.

Automation extension bases for GARANT Xtric units and vices with grid size 52 mm or 96 mm

For Xtric units and vices with grid size 52 mm.
Height = 100 mm
The article is available in the eShop.
See article No. 360245 52.



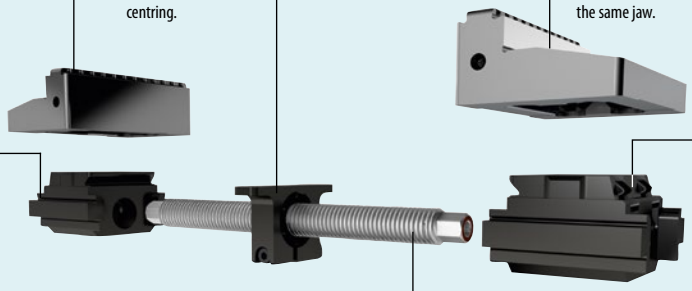
For Xtric units and vices with grid size 96 mm.
Height = 100 mm
The article is available in the eShop.
See article No. 360245 96.

Garant Centring to perfection for your automation.

Top jaws with optimised contour design
- Optional coating for process reliability in machining.
- Hardened and underside ground.
- Very good repetition accuracy < 0.01 mm.

100 % centred
- Centring adjustment for perfect centring.

Various different top jaws
- Finished parts are clamped using pairs of parallels.
- Raw materials and finished parts are clamped using the same jaw.



Spindle nut with or without pivot function
- The size code P stands for pivoting jaw.
- The pivot function nut permits pivoting by ± 2°.
- Use of the pivot function nut offers increased security for components such as sawn parts.

Clamping jaw quick-change system
- Clamping jaw quick-change in seconds without tools by clicking on the dovetail slide.

Chromium-plated spindle
- Linear clamping force development
  – XTRIC80: 85Nm generates 25kN clamping force
  – XTRIC125: 120Nm generates 32kN clamping force
- Internal clamping available by switching the spindle nuts.

Different base lengths
- Choose the right length for every machine.

Clamping edge
- Perfect for stepless adjustable clamps.

Laser-engraved graduations
- For pre-positioning the clamping jaws.

endutec Interface for automated applications
- Freely usable interface.
- Also serves as a coolant hole.

Longitudinal slots
- Quick and easy alignment of the machine tool table.

Centring adjustment with pin wrench

Standard gripper interface
- Gripper mounting holes on both sides for automation.

Special underside
- Hole pattern suitable for the "LONG" positioning system. (Grid scale for the XTRIC80: 52 mm; XTRIC125: 96 mm)
- Can be clamped to the GARANT ZeroClamp using the adapter.

Garant Xtric centring vice

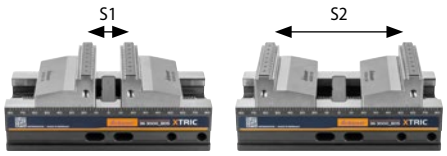
Now available in new sizes!

- Very good accessibility and perfectly symmetrical.
- Fully hardened and ground on the underside.
- Central alignment delivers perfectly centred clamping.
- Clamps raw materials and finished parts with the least possible lifting of the jaws / component.
- Supplied with holes for LONG positioning system, **can be adapted to GARANT ZeroClamp using an intermediate plate.**
- Jaws can be changed without using tools. Changing the jaws may result in a change of clamping capacity.

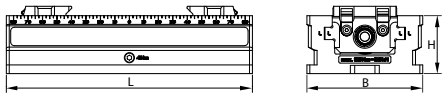
Suitable for: Top jaws No. 363010 – 363045.
Application: Perfect for 5-face machining. Centred clamping.
Supplied with: Base rail, spindle, spindle nuts.
Optional extras: Hexagon screwdriver No. 627424 size 5, pin wrench 628600 size 2, torque wrench No. 656050, hexagon socket No. 642229, clamping claws No. 363081 80 and 361165 CS1.

Note: Suitable top jaws No. 363010 – 363045 not included in the scope of supply. Clamping situation S2 arises by reversing the jaws. Use offset top jaws to overcome the clamping gaps with types XS and XSP.

36 3000_125S



Large capacity range S1 – S2 with the same Xtric and the respective accessories.



Type			new 80XS	new 80XSP	80S	80SP	80M	80MP	new 125XS	new 125XSP	new 125S	new 125SP	new 125M	new 125MP
310 36 3000	Centring vice basic device Xtric		XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
Clamping force up to maximum		kN	25	25	25	25	25	25	32	32	32	32	32	32
Weight		kg	2.7	2.7	3.2	3.2	4	4	7.8	7.8	9	9	10.6	10.6
L		mm	136	136	170	170	220	220	186	186	220	220	270	270
B		mm	80	80	80	80	80	80	125	125	125	125	125	125
H		mm	40	40	40	40	40	40	54	54	54	54	54	54
S1		mm	0 – 42	0 – 42	0 – 76	0 – 76	0 – 126	0 – 126	0 – 60	0 – 60	0 – 94	0 – 94	0 – 144	0 – 144
S2		mm	74 – 110	74 – 110	74 – 144	74 – 144	74 – 194	74 – 194	92 – 146	92 – 146	92 – 180	92 – 180	92 – 230	92 – 230
Longitudinal slot l		mm	20											
Swing angle		degrees	–	±2	–	±2	–	±2	–	±2	–	±2	–	±2
maximum torque		N·m	85	85	85	85	85	85	132	132	132	132	132	132
Width across flats		mm	10; 5	10; 5	10; 5	10; 5	10; 5	10; 5	13; 5	13; 5	13; 5	13; 5	13; 5	13; 5
Colour code for suitable accessories														

Colour code: Xtric 80 Xtric 125

Garant Xtric accessories

Spindle bearing, complete — piece

- Permits the clamping of two components.
- 4 mm length compensation of the spindle for clamping workpieces of different sizes.
- Straightforward assembly and removal.

Suitable for: Separately obtainable centre jaws No. 363040, 363042, 363044.
Supplied with: Spindle bearing, spindle with length compensation.
Optional extras: Hexagon screwdriver No. 627424 size 3 and size 5.

Note: Not for use with Xtric types XS and XSP!

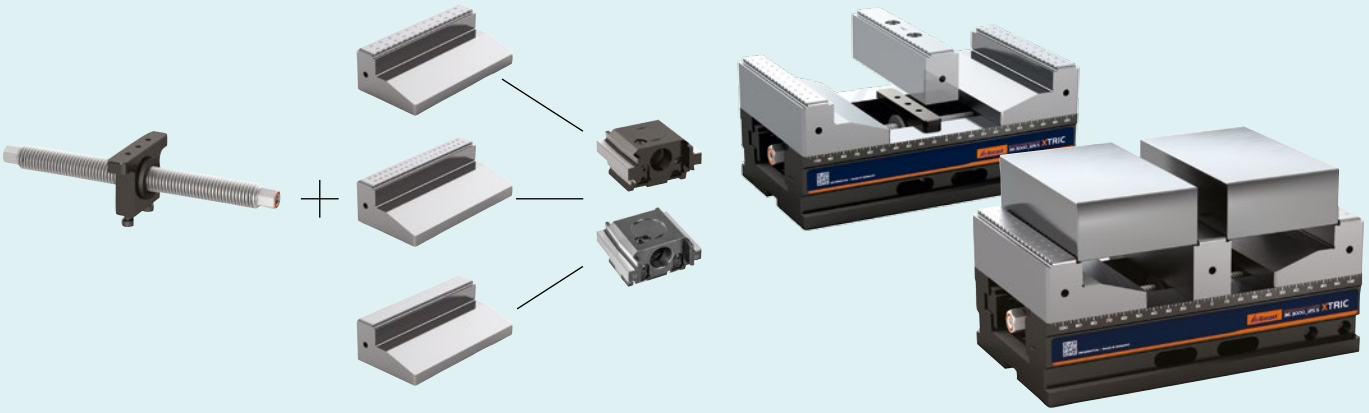
36 3008

Clamping situation with 36 3008, 36 3040 and 36 3041 reversed.

Type		80/170	80/220	125/220	125/270
310 36 3008	Spindle bearing, complete	XXX	XXX	XXX	XXX
Width across flats	mm	10; 5	10; 5	13; 5	13; 5
suitable for type		80S; 80SP	80M; 80MP	125S; 125SP	125M; 125MP
suitable for colour code					

Garant Double clamping works better

Clamp two workpieces at the same time with the new Xtric centre jaw!



Centre jaws — piece

36 3040 – With grip serrations in a 3 mm step and a smooth clamping face.
36 3042 – Pre-impression of the serrated contour necessary. With 3 mm grip step and smooth clamping face.
36 3044 – With smooth 3 mm grip step and smooth clamping face.

Suitable for: Spindle bearing, complete No. 363008.

Note: Not for use with Xtric types XS and XSP!

36 3040_80

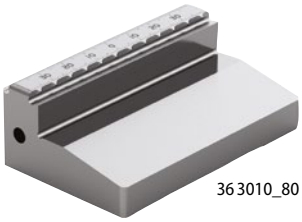
Type		80 (new)	125 (new)
310 36 3040	Standard centre jaw	XXX	XXX
310 36 3042	Centre jaw, LANG system	XXX	XXX
310 36 3044	Smooth centre jaw	XXX	XXX
b	mm	80	125
h	mm	28	38
l	mm	23	26
suitable for colour code			

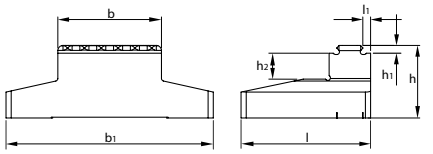
36 3044_125

Colour code: Xtric 80 Xtric 125

Combination top jaws — piece

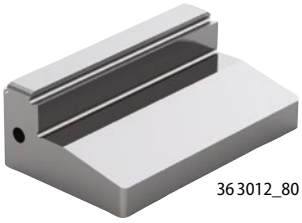
36 3010/3014/3018/3022/3026/3030 – Combination jaws with grip serrations and a smooth clamping face.
36 3012/3016 – Jaws with a smooth step.
36 3014/3016/3022 – With coating on the smooth clamping face for optimum retaining force.
36 3018/3022/3030 – Pre-impression of the serrated contour necessary.


36 3010_80

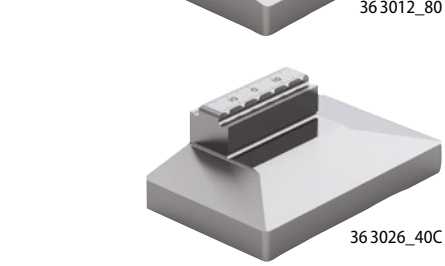


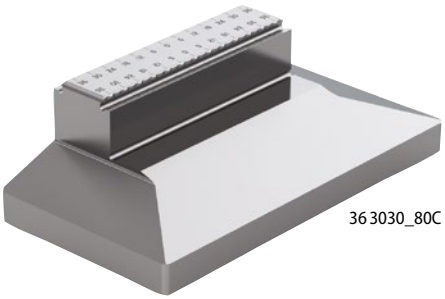
GARANT tooth 36 3014

LANG tooth 36 3018


36 3012_80

for type		40C	80 (new)	80C (new)	125
310 36 3010	Standard top jaw	–	XXX	–	XXX
310 36 3012	Top jaw, smooth	XXX	XXX	XXX	XXX
310 36 3014	Standard top jaw, coated	–	XXX	–	XXX
310 36 3016	Top jaw, smooth coated	–	XXX	–	XXX
310 36 3018	Top jaw system, LANG	–	XXX	–	XXX
310 36 3022	Top jaw system, LANG, coated	–	XXX	–	XXX
310 36 3026	Standard top jaw, width-reduced	XXX	–	XXX	–
310 36 3030	Top jaw system, LANG, width-reduced	XXX	–	XXX	–
b	mm	40	–	80	–
b_1	mm	80	80	125	125
h	mm	28	28	38	38
h_1	mm	3			
h_2	mm	10	10	18	18
l	mm	50	50	66	66
l_1	mm	3			
Weight	kg	0.35	0,45	1.2	1.35
suitable for colour code					


36 3026_40C


36 3030_80C

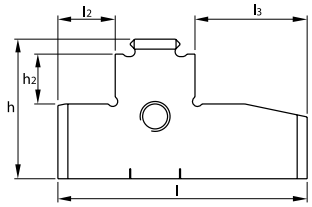
Top jaws, offset — piece

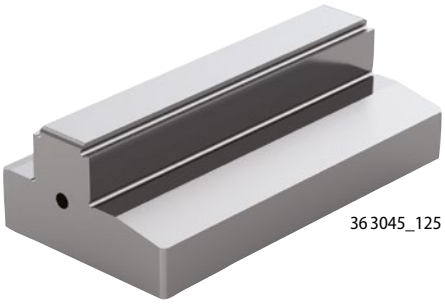
36 3041 – With grip serrations in a 3 mm step and a smooth clamping face.
36 3043 – Pre-impression of the serrated contour necessary.
With 3 mm grip step and smooth clamping face.
36 3045 – With smooth 3 mm grip step and smooth clamping face.

Application: To avoid clamping gaps. See clamping capacity overview.

36 3041_80

Clamping situation with 363041




36 3045_125

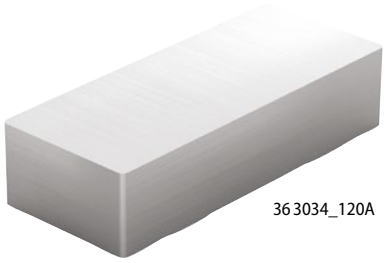
Type		80 (new)	125 (new)
310 36 3041	Standard top jaw, offset	XXX	XXX
310 36 3043	Top jaw, offset, LANG system	XXX	XXX
310 36 3045	Top jaw, offset, smooth	XXX	XXX
b	mm	80	125
h	mm	28	38
h_2	mm	10	15
l	mm	50	66
Length L_2	mm	11.5	14.5
l_3	mm	22.5	28.5
suitable for colour code			

Colour code: Xtric 80 Xtric 125

Soft top jaws — piece

Application: For realising customised contours and for machining sensitive components.

Note: Dovetail slide available for quick change of jaws.
Version S of steel and A of aluminium.
Article 363034 120A and 160A may be clamped only to max. 34Nm. (34Nm=1t)


36 3034_120A

Type	310 36 3034 Soft top jaw	Material	b mm	h mm	l mm	suitable for colour code
120S	XXX	1.7227	120	28	50	
120A	XXX	EN AW-7075	120	28	50	
new 160S	XXX	1.7227	160	38	66	
new 160A	XXX	EN AW-7075	160	38	66	

Adapter plates for zero-point clamping systems — piece

Application: For adaptation of the Xtric to indexed clamping pots.

Note: See the photo for the hole pattern of the Xtric. Suitable for LANG positioning system with pitch 52mm on Xtric type 80 and 96 mm on Xtric type 125.

36 3080

Unterseite Xtric

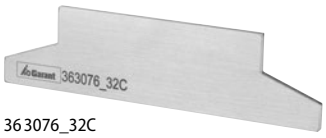
Xtric type / for clamping pot ∅ mm		80/120	80/138	new 125/120	new 125/138
310 36 3080	Adapter plate	XXX	XXX	XXX	XXX
Mounting hole		18M12			
suitable for colour code					

Pairs of parallels, magnetic for clamping finished parts

Note: Sizes 20C, 22C, 30C and 32C were modified to suit the contour of the reduced-thickness jaws.

36 3076_20

Back face

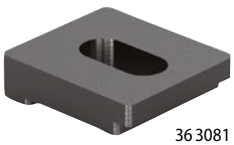


36 3076_32C

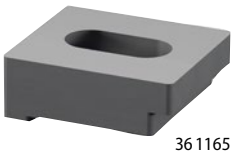
Height mm		5	7	10	12	15	20	20C	22	22C	25	30	30C	32	32C
310 36 3075	Pair of parallels magnetic	XXX	XXX	XXX	–	XXX	XXX	XXX	XXX	XXX	–	–	–	–	–
new 310 36 3076		–	–	XXX	XXX	–	XXX	–	–	–	XXX	XXX	XXX	XXX	XXX
Length (36 3075) mm		80	80	80	–	80	80	80	80	80	–	–	–	–	–
Length (36 3076) mm		–	–	125	125	–	125	–	–	–	125	125	125	125	125
Width mm		2.5													
suitable for colour code (36 3075)					–						–	–	–	–	–
suitable for colour code (36 3076)		–	–			–		–	–	–					

Clamping claw — piece

Type	310 36 3081 Clamping claw	B mm	H mm	L mm	suitable for colour code
80	XXX	40	12	45	


36 3081

Type	310 36 1165 Clamping claw	B mm	H mm	L mm	suitable for colour code
CS1	XXX	50	20	56	


36 1165

Spindle nuts — piece

36 3097 – For converting a pivoted Xtric into a rigid Xtric.
36 3098 – When using a centre jaw in order that the left-hand side is pivoted.
36 3099 – For converting a rigid Xtric into a pivoted Xtric.

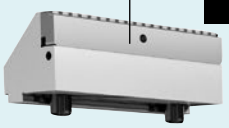
36 3099

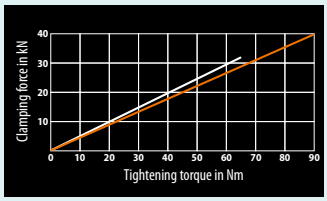
Type		80	125
310 36 3097	Rigid right-hand spindle nut	XXX	XXX
310 36 3098	Spindle nut with left-hand pivot function	XXX	XXX
310 36 3099	Spindle nut with right-hand pivot function	XXX	XXX
suitable for colour code			

Colour code: Xtric 80 Xtric 125 Xpent1-2

Garant The Xpent family – a unique range in perfection

Top jaws with optimised contour design
- Coating for process reliability in machining.
- Hardened and ground.
- Very good repetition accuracy < 0.01 mm.





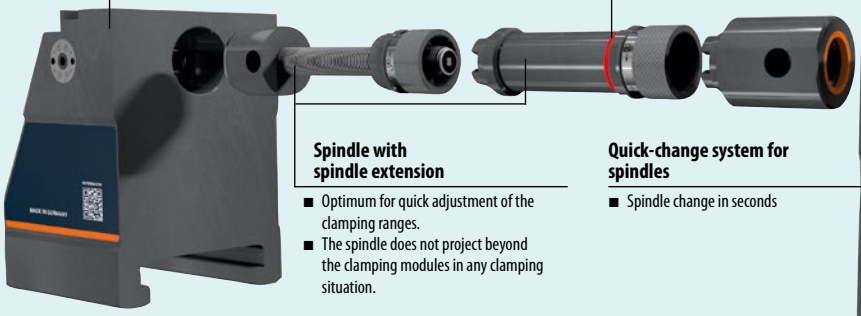
GARANT Xpent 361100_0

GARANT Xpent 361100_1 and 1S
GARANT Xpent 361100_2

Front jaws
- Wide variety
- 2 clamping steps on each jaw

Red security ring
For visual detection of incorrect assembly.

Clamping modules
- Lower risk of collisions due to reduced interference contours.
- Symmetrical
- Convex shape
- Both clamping modules can be moved

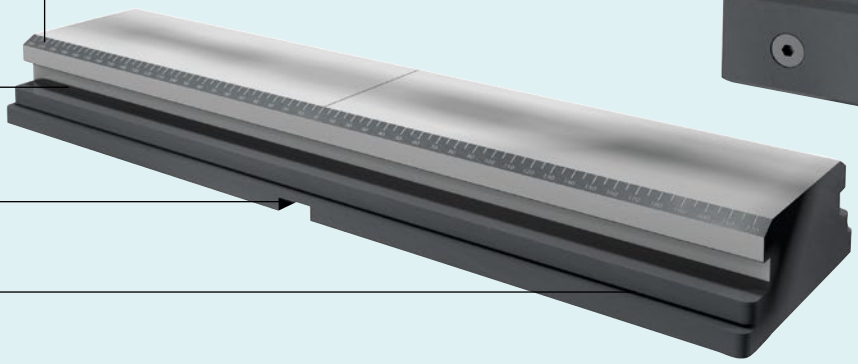


Spindle with spindle extension
- Optimum for quick adjustment of the clamping ranges.
- The spindle does not project beyond the clamping modules in any clamping situation.

Quick-change system for spindles
- Spindle change in seconds

Scaling
- For pre-positioning the clamping modules.

High precision guide
- The clamping modules do not tilt when moved.



Transverse slots
- For aligning to the machine table.

Clamping lip
- For steplessly adjustable clamps.

Clamping range overview Xpent sizes 1, 1S and 2

Base rail No. 36 1115		Size 450		Size 550		Size 650		Size 850		Size 1050	
		Standard	Turned	Standard	Turned	Standard	Turned	Standard	Turned	Standard	Turned
Spindle	mm	6 – 108		6 – 108		6 – 108		6 – 108		6 – 108	
+ extension No. 36 1120											
Size 100	mm	104 – 208	186 – 290	104 – 208	186 – 290	104 – 208	186 – 290	104 – 208	186 – 290	104 – 208	186 – 290
Size 200	mm	–	286 – 386	204 – 308	286 – 390	204 – 308	286 – 390	204 – 308	286 – 390	204 – 308	286 – 390
Size 100 and 200	mm	–	–	–	386 – 486	304 – 408	386 – 490	304 – 408	386 – 490	304 – 408	386 – 490
Size 400	mm	–	–	–	–	–	486 – 586	404 – 508	486 – 590	404 – 508	486 – 590
Size 100 and 400	mm	–	–	–	–	–	–	504 – 608	586 – 690	504 – 608	586 – 690
Sizes 200 and 400	mm	–	–	–	–	–	–	–	686 – 786	604 – 708	686 – 790
Size 100; 200 and 400	mm	–	–	–	–	–	–	–	–	704 – 808	786 – 890
Sizes 400 and 400	mm	–	–	–	–	–	–	–	–	–	886 – 986

Clamping range overview Xpent size 0

Base rail No. 361115		Size 360		Size 440		Size 520	
		Standard	Turned	Standard	Turned	Standard	Turned
Spindle	mm	6 – 88	–	6 – 88	–	6 – 88	–
+ extension No. 36 1120							
Size 80	mm	84 – 168	159 – 243	84 – 168	159 – 243	84 – 168	159 – 243
Size 160	mm	–	239 – 301	164 – 248	239 – 323	164 – 248	239 – 323
Size 80 and 160	mm	–	–	–	319 – 381	244 – 328	319 – 381
Size 160 and 160	mm	–	–	–	–	–	399 – 461

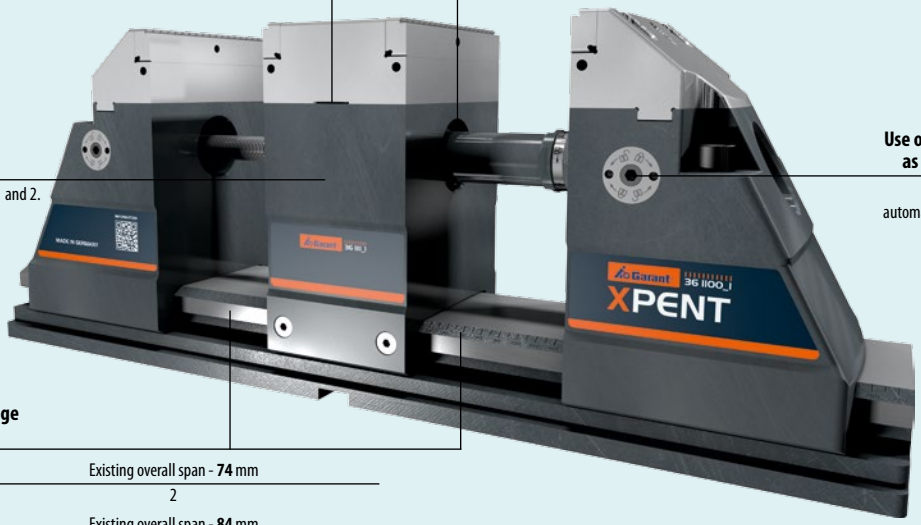
Garant Turn 1 into 2 – individual multiple clamping

Take advantage of the middle jaw
- Clamping of 2 components.
- Components can have different sizes.
- Components are clamped simultaneously.
- Modules are flexible and can be slid individually on the base rail.

Quick fixation of the middle jaw
Clamping via 2 screws.

Through hole
To guide through the spindle.

2 different widths
- 125 mm for GARANT Xpent sizes 1S, 1 and 2.
- 100 mm for GARANT Xpent size 0.



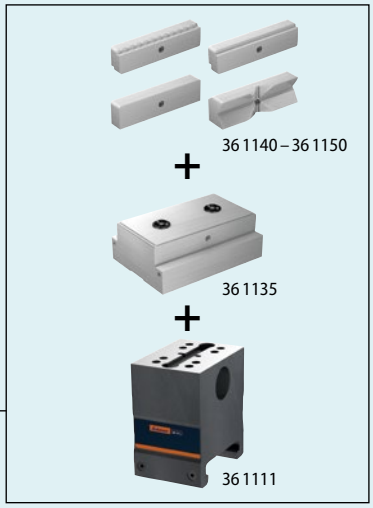
Use of the fixed clamping module as a "mobile" clamping module
Both clamping modules automatically adapt to the component size, as they are freely movable.

Rule of thumb for clamping range when using the middle jaw
- Size 0: $\frac{\text{Existing overall span - } \mathbf{74} \text{ mm}}{2}$
- Sizes 1, 1S, 2: $\frac{\text{Existing overall span - } \mathbf{84} \text{ mm}}{2}$

Result = new capacity for 2 components.
The dimensions apply when using the middle jaw with front jaw.

Note: When using the middle jaw in combination with the base rail size 360 and 450, clamping gaps could be created. If necessary, use our clamping capacity overview.

- 2 turned top jaws for increased clamping range, optimally from base rail 550 mm.
- Combination of normal and turned top jaw. Perfect for extremely different sized components.



Clamping range overview Xpent sizes 1, 1S and 2

Base rail No. 36 1115		Size 450		Size 550		Size 650		Size 850		Size 1050	
		Standard	Turned	Standard	Turned	Standard	Turned	Standard	Turned	Standard	Turned
Spindle	mm	6 – 12	–	6 – 12	–	6 – 12	–	6 – 12	–	6 – 12	–
+ extension No. 36 1120											
Size 100	mm	10 – 62	96 – 103	10 – 62	96 – 103	10 – 62	96 – 103	10 – 62	96 – 103	10 – 62	96 – 103
Size 200	mm	–	101 – 149	60 – 112	101 – 151	60 -112	101 – 151	60 -112	101 – 151	60 -112	101 – 151
Size 100 and 200	mm	–	–	–	149 – 199	110 – 162	149 – 201	110 – 162	149 – 201	110 – 162	149 – 201
Size 400	mm	–	–	–	–	–	199 – 249	160 – 212	199 -251	160 – 212	199 -251
Size 100 and 400	mm	–	–	–	–	–	–	210 – 262	249 -301	210 – 262	249 – 301
Sizes 200 and 400	mm	–	–	–	–	–	–	–	299 – 349	260 – 312	299 – 351
Size 100; 200 and 400	mm	–	–	–	–	–	–	–	–	310 – 362	349 – 401
Sizes 400 and 400	mm	–	–	–	–	–	–	–	–	–	399 – 449

Clamping range overview Xpent size 0

Base rail No. 361115		Size 360		Size 440		Size 520	
		Standard	Turned	Standard	Turned	Standard	Turned
Spindle	mm	–	–	–	–	–	–
+ extension No. 36 1120							
Size 80	mm	5 – 47	72.5 – 84.5	5 – 47	72.5 – 84.5	5 – 47	72.5 – 84.5
Size 160	mm	–	82.5 – 113.5	45 – 84	82.5 – 124.5	45 – 87	82.5 – 124.5
Size 80 and 160	mm	–	–	–	122.5 – 153.5	85 – 127	122.5 – 164.5
Size 160 and 160	mm	–	–	–	–	–	162.5 – 193.5

XPENT 5-axis vice sets

- Very good accessibility and perfectly symmetrical.
- Flexible modular clamping system.
- All functional faces hardened and ground.
- Clamping force up to 40 kN at 90 Nm torque.
- Both clamping modules can be positioned individually on the base rail.
- Variable clamping and adjustment range.
- Repetition accuracy < 0.01 mm.
- **Including holes 18M16 for zero point clamping system pitch 200mm.**

Application: Perfect for true 5-face machining.
In conjunction with various jaws it can be used for conventional, smooth-faced clamping and clamping of unfinished parts.

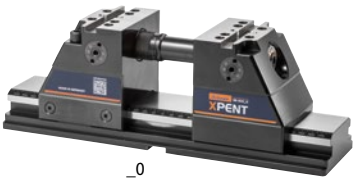
Supplied with: Base rail, spindle, spindle extension, crank / hexagon screwdriver, fixed clamping module, mobile clamping module.

Optional extras: Clamping modules No. 361105 – 361110, centre jaw No. 361111, base rails No. 361115, spindle No. 361119, spindle extensions No. 361120, stepless adjustable clamps No. 361165, torque wrench No. 656050 size 120, screwdriver bit No. 643200, workpiece back-stop No. 360094, top jaws No. 361123 – 361136.

Note: **Matching top jaws No. 361123 – 361136 and front jaws No. 361140 – 361150 are not supplied.**
Clamping situation S4 requires a further spindle extension No. 361120.

Welcome to the 5th dimension!
For further information see:
http://ho7.eu/361100

DESIGN AWARD 2018



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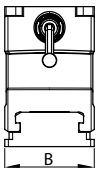
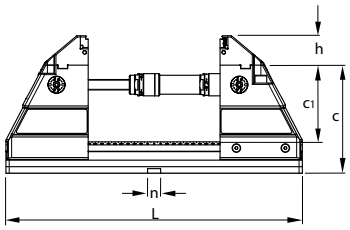
_1

Large capacity range S1–S4 with the same Xpent + the respective accessories programme.

Type		0	1S	1	2
310 36 1100	5-axis vice **Xpent**	XXX	XXX	XXX	XXX
S1	mm	6 – 88	6 – 108	6 – 108	6 – 108
S2	mm	84 – 168	104 – 208	104 – 208	104 – 208
S3	mm	159 – 243	186 – 290	186 – 290	186 – 290
S4	mm	239 – 301	286 – 386	286 – 386	286 – 386
L	mm	362	454	454	454
c	mm	125	125.5	165.5	195.5
c_1	mm	85	77.5	117.5	147.5
B	mm	100	125	125	125
n H7	mm	20			
h	mm	40	45	45	45
Clamping force up to maximum	kN	32	40	40	40
maximum torque	N·m	65	90	90	90
Weight	kg	19	34	36	41
Width across flats	mm	5; 8	5; 10	5; 10	5; 10
Spindle extension size		80	100	100	100
Colour code for suitable accessories					





XPENT modular system – individually configure your 5-axis vice.

The 5-axis vice has a modular design. The key components are the clamping modules No. 361105 – 361110, base rails No. 361115, spindle No. 361119, spindle extensions No. 361120 and the top jaws No. 361123 – 361136.

Clamping modules — piece

All functional faces hardened and ground.

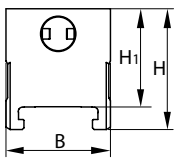
Suitable for: Base rails No. 361115, spindle No. 361119 and top jaws No. 361123 – 361136.

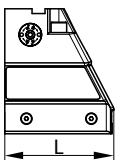
Note: You will need a 5 AF screwdriver bit for spindle locking.
36 1105 – You will need a hexagon screwdriver bit (type 0 = 8 AF, type 1, 1S+2 = 10 AF) for the attachment screws.

36 1110_1

36 1105_1

for type		0	1S	1	2
310 36 1105	Fixed clamping module	XXX	XXX	XXX	XXX
310 36 1110	Mobile clamping module	XXX	XXX	XXX	XXX
L	mm	100	126	126	126
B	mm	100	125	125	125
H	mm	108	104.5	144.5	174.5
H_1	mm	85	77.5	117.5	147.5
Weight	kg	4.5	8	9	11
suitable for colour code					



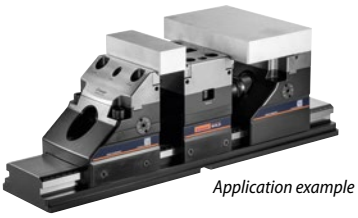


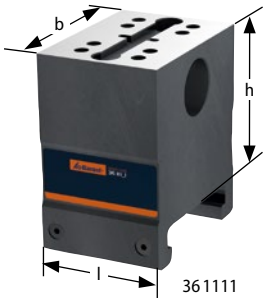
Colour code: Xpent0 Xpent1-2

Centre jaw — piece

Application: For multiple clamping.
Components of different lengths can also be clamped.

Note: For a detailed overview of the clamping capacities see the Xpent promotion.


Application example



for type		0	1S	1	2
310 36 1111	Centre jaw	XXX	XXX	XXX	XXX
b	mm	100	125	125	125
h	mm	85	77.5	117.5	147.5
l	mm	80	90	90	90
suitable for colour code		■	■	■	■

Base rails — piece

Fully hardened and ground. Laser engraved scale for prepositioning the clamping claws.
Side groove for steplessly adjustable clamps and transverse slots for alignment on the machine table.

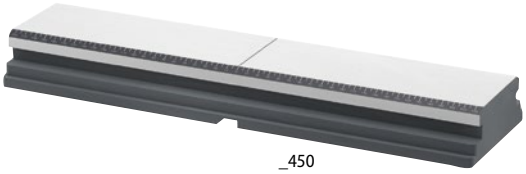
Size 450; 550 – GARANT ZeroClamp bores drilled as standard. Pitch 200 mm.

Suitable for: Clamping modules No. 361105 – 361110.

Size 360H – Round table ∅ 320 mm. Attachment via stepless adjustable clamps and T-slot.

Optional extras: Clamping claws No. 361165, adapter plate for GARANT ZeroClamp No. 361170, clamping studs No. 360025 size 18M16 and size 18M16/138.

Note: See No. 375365 for suitable T-nuts.
GARANT ZeroClamp holes available on request from size 650.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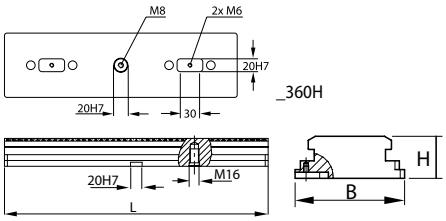


Type		360	360H	440	520	450	550	650	850	1050
310 36 1115	Base rail	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
L	mm	362	362	442	522	454	554	654	854	1054
B	mm	100	100	100	100	125	125	125	125	125
H	mm	40	40	40	40	48	48	48	48	48
Weight	kg	8.5	8.5	10.5	12.5	17	21	25	32	40
Number of ZC holes		2	–	5	3	5	3	on request	on request	on request
suitable for colour code		■	■	■	■	■	■	■	■	■

Spindles — piece

Trapezoidal spindle for optimal force transfer.

Suitable for: Clamping modules No. 361105 – 361110.

Application: TR14 and TR16 **for external clamping**, TR14I and TR16I **for internal clamping**.

Optional extras: Spindle extensions No. 361120, torque wrench No. 656050 120.

Size TR14 – Hexagon screwdriver bit No. 643330 8.

Size TR16 – Hexagon screwdriver bit No. 643330 10.

36 1119_TR14I

Type		TR14	TR14I	TR16	TR16I
310 36 1119	Spindle	XXX	XXX	XXX	XXX
∅ D	mm	34	34	40	40
AF_1		8	10	10	13
AF_2		27	27	30	30
L	mm	201.1	201.1	229.6	229.6
suitable for colour code		■	■	■	■

Spindle extensions — piece

Suitable for: Spindle No. 361119.

Length		40	80	160	50	100	200	400
310 36 1120	Spindle extension	XXX	XXX	XXX	XXX	XXX	XXX	XXX
∅ D	mm	30	30	30	34	34	34	34
AF_2		27	27	27	30	30	30	30
L	mm	50.4	90.4	170.4	61.9	111.9	211.9	411.9
suitable for colour code		■	■	■	■	■	■	■

Colour code: ■ Xpent0 ■ Xpent1-2

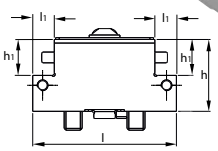
Top jaws

Suitable for: 5-axis vice set No. 361100 and clamping module No. 361105 – 361110.

Top jaws for the middle jaw — piece

Suitable for: No. 361111.
Application: For mounting front jaws No. 361140 – 361149.
Supplied with: Including cover plate.

36 1135



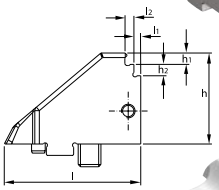
for type	310 36 1135 Garant Top jaw for centre jaw	b mm	h mm	h_1 mm	l mm	l_1 mm	suitable for colour code
100	XXX	100	40	20	80	12	
125	XXX	125	45	20	90	12	

Top jaws Gripp single-piece 5 mm — piece

Clamping step with a height of 5 mm and 3 mm contact area.
Application: Ideal for rough machining.

Note: Type GS with gripp step and smooth clamping step

36 1123_100GS

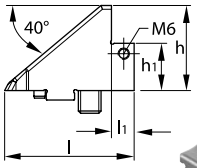


36 1123_100/32

for type	310 36 1123 Garant Top jaw Gripp, single piece	b mm	h mm	h_1 mm	h_2 mm	l mm	l_1 mm	l_2 mm	suitable for colour code
100GS	XXX	100	40	5	5	60	3	3	
100/32	XXX	100	40	5	5	60	3	3	
125GS	XXX	125	45	5	5	68.5	3	3	
125/32	XXX	125	45	5	5	68.5	3	3	

Top jaws — piece

Coated, hardened and ground.
36 1125 Size 80C –Comfort version, width-reduced variant.
36 1124 Size 63C; 80C/36 1125 Size 100C – Comfort version, width-reduced variant.
Application: For mounting front jaws No. 361140 – 361149.



36 1125_80C

36 1125_125

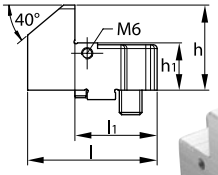
For type	310 36 1124 Garant	310 36 1125 Garant Standard top jaw	b mm	h 36 1124 mm	h 36 1125 mm	h_1 36 1124 mm	h_1 36 1125 mm	l 36 1124 mm	l 36 1125 mm	l_1 mm	suitable for colour code 36 1124	suitable for colour code 36 1125
63C	XXX	–	63	40	–	20	–	60	–	12		–
100	XXX	–	100	40	–	20	–	60	–	12		–
80C	XXX	XXX	80	40	45	20	25	60	68.5	12		
100C	–	XXX	100	–	45	–	25	–	68.5	12	–	
125	–	XXX	125	–	45	–	25	–	68.5	12	–	

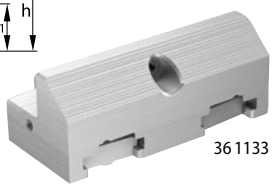
Top jaws for reversed clamping modules — piece

Coated, hardened and ground.
Application: For mounting front jaws No. 361140 – 361150.

Note:
36 1126 – Essential for clamping modules which have been reversed 180°.
36 1133 – Mounting recommendation on a **fixed clamping module**.
Matching counter jaw No. 361126.

36 1126




36 1133

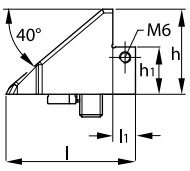
for type	310 36 1126 Garant	310 36 1133 Garant Top jaw for reversed clamping modules **rigid**	**Pivoted**	b mm	h mm	h_1 mm	l mm	l_1 36 1126 mm	Swing angle 36 1133 degrees	suitable for colour code
100	XXX	XXX		100	40	20	60	43.5	15	
125	XXX	XXX		125	45	25	68.5	43.5	15	

Top jaws — piece

Coated, hardened and ground.
Application: For mounting front jaws No. 361140 – 361149.

Note: Mounting recommendation on **fixed clamping module.**
Matching counter jaw No. 361125.

36 1127



for type	310 36 1127 Garant Top jaw **pivoting**	b mm	h mm	h_1 mm	l mm	l_1 mm	Swing angle degrees	suitable for colour code
100	XXX	100	40	20	60	12	15	
125	XXX	125	45	25	68.5	12	15	

Colour code: Xpent0 Xpent1-2

Gripp top jaws — piece

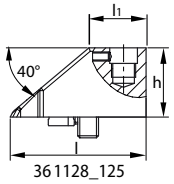
Application:

36 1128 Size 10–160/36 1129 Size 10–160 – For mounting grip inserts No. 361160.
For compensation of non-parallel clamping faces. Grip inserts can be screwed into a variety of hole patterns, for secure clamping of various geometries.

Size 100SG; 125SG – To take Gripp inserts No. 361163. Number of inserts size100 = 5 and size 125 = 6.
Suitable screws No. 361164 and Gripp inserts must be ordered separately.

Note:
36 1129 – Mounting recommendation on **fixed clamping module.**
Matching counter jaw No. 361128.

36 1128_160



36 1128_125

36 1129_160

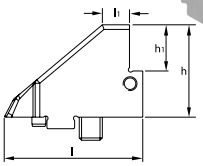
36 1128_125

36 1129_125

36 1128_100SG

36 1128_125SG

for type	310 36 1128 Garant	310 36 1129 Garant	b	h	h_1	l	l_1	Swing angle	suitable for colour code
	Gripp top jaw							36 1129	
	rigid	pivoting	mm	mm	mm	mm	mm	degrees	
100	XXX	XXX	100	35	35	70	33	30	
100SG	XXX	–	100	40	20	60	5.75	–	
125	XXX	XXX	125	40	40	78.5	40	30	
125SG	XXX	–	125	45	20	68.5	5.75	–	
160	XXX	XXX	160	40	40	78.5	40	30	

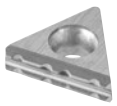


36 1128_100SG

Gripp inserts for SG top jaws

Suitable for: Grip top jaws No. 361128 100SG and No. 361128 125SG.
Application: For clamping workpieces that require high stability.
Optional extras: Replacement screw No. 361164.

Note: For milling cutters for the clamping seats see the spare parts list.
Size PI – Protective insert for an insert seat.



Type		S	HS	A	PI
335 36 1163	Gripp inserts set, pack of 10	XXX	XXX	XXX	XXX
Suitable for: Material		Steel up to 980N/mm²	hardened steel HRC 50-54	Aluminium	-

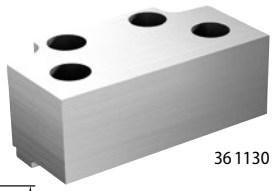
Clamping screw

Type		1
335 36 1164	Torx screws, VTX30 pack of 10	XXX
maximum tightening torque	N·m	2

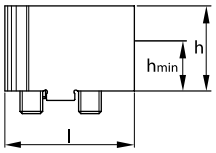
36 1164

Soft top jaws — piece

Application: For realising customised contours and for machining sensitive components.


36 1130

for type	310 36 1130 Garant	b	h	h_{min}	l	suitable for colour code
	Soft top jaw					
		mm	mm	mm	mm	
63	XXX	63	40	25.5	60	
100	XXX	100	40	25.5	60	
80	XXX	80	45	26.5	68.5	
125	XXX	125	45	26.5	68.5	

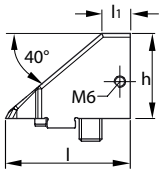


Top jaws for parallels, 2.5 mm — piece

Application: Jaw is set back by 2.5 mm.
Ideal in combination with parallels No. 366740.

36 1131

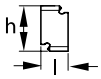
for type	310 36 1131 Garant	310 36 1134 Garant	b	h	l	l_1	suitable for colour code
	Top jaw for parallels						
		coated	mm	mm	mm	mm	
100	XXX	XXX	100	40	57.5	15	
125	XXX	XXX	125	45	66	15	



Colour code: Xpent0 Xpent1-2

Front jaws

Suitable for: Top jaws No. 361124 - 361127, No. 361133 and No. 361135.
Stepped jaws No 361295 - 361296.

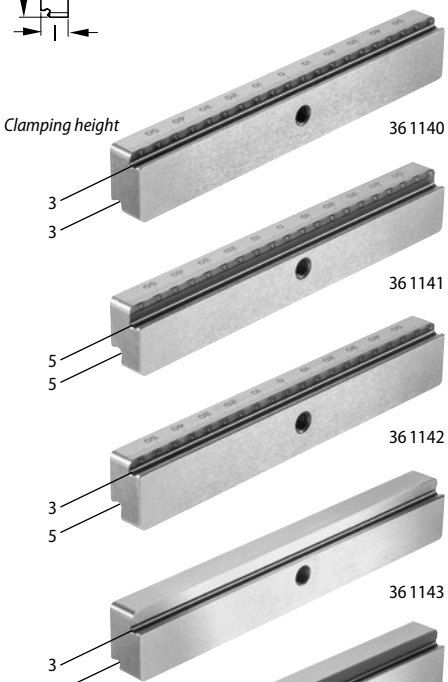


Dual front jaws — piece

3 mm contact face.

36 1140 – 2 clamping steps with a height of 3 mm.
36 1141 – 2 clamping steps with a height of 5 mm.
36 1144 – 3 mm contact face.
36 1142–1144 – First clamping step with a height of 3 mm. Second clamping step with a height of 5 mm.

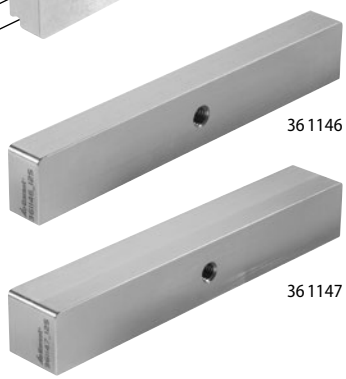
Advantage:
36 1140–1144/1150 – **Turning the jaw provides a second clamping step.**



for type		63	80	100	125
310 36 1140	Gripp 3/3 front jaw	XXX	XXX	XXX	XXX
310 36 1141	Gripp 5/5 front jaw	XXX	XXX	XXX	XXX
310 36 1142	Gripp 3/5 front jaw	XXX	XXX	XXX	XXX
310 36 1143	Smooth front jaw 3/5	XXX	XXX	XXX	XXX
310 36 1144	Smooth front jaw 3/5 **coated**	XXX	XXX	XXX	XXX
310 36 1145	Combination front jaw gripp/smooth 3/3	XXX	XXX	XXX	XXX
310 36 1150	Gripp 3/5 front jaw **for soft materials**	XXX	XXX	XXX	XXX
b	mm	63	80	100	125
h	mm	20			
l	mm	12			
suitable for colour code		■	■ ■	■ ■	■

Soft front jaw — piece

Application: For realising customised contours and for machining sensitive components.

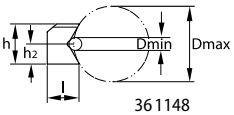


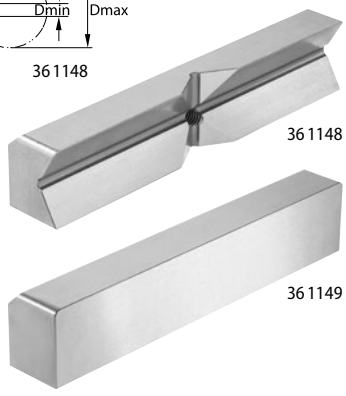
for type		63	80	100	125
310 36 1146	Soft 12/20 front jaw	XXX	XXX	XXX	XXX
310 36 1147	Soft 20/20 front jaw	XXX	XXX	XXX	XXX
b	mm	63	80	100	125
h	mm	20			
l (36 1146)	mm	12			
l (36 1147)	mm	20			
suitable for colour code		■	■ ■	■ ■	■

Vee front jaw — piece

Suitable for:

36 1149 – Vee front jaw No. 361148.





for type		63	80	100	125
310 36 1148	Vee top jaw	XXX	XXX	XXX	XXX
310 36 1149	Smooth front jaw for Vee jaw	XXX	XXX	XXX	XXX
b	mm	63	80	100	125
h	mm	25			
l (36 1148)	mm	19.8			
l (36 1149)	mm	20			
D_{min} (36 1148)	mm	8			
D_{max} (36 1148)	mm	47			
suitable for colour code		■	■ ■	■ ■	■

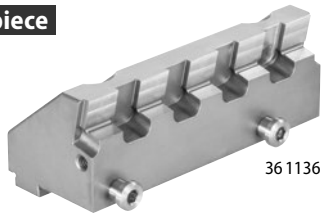
Colour code: ■ Xpent0 ■ Xpent0

Accessories

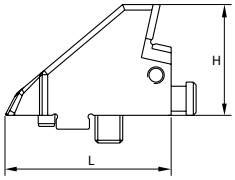
Top jaws for pull-down system — piece

Hardened and ground

Application: Pull-down system in conjunction with shims No. 361161 and pull-down inserts No. 361162.
Optimum for machining the 6th face, because the workpiece is pulled down on to the base rail by the pull-down insert and shim.
Shims of 5, 10 and 15 mm available



36 1136



for type	310 36 1136 Garant Pull-down top jaw	b mm	h mm	l mm	Number of slots for inserts	suitable for colour code
100	XXX	100	40	60	4	
125	XXX	125	45	68.5	5	

Shims for pull-down system — piece

Material: Steel, induction hardened and hard milled.
Material thickness 5mm, with magnets on the rear face

Note: Shims are inserted into the pull-down jaw without being screwed into the front jaw screws.

36 1161

Type/shim height (W/H)		100/110	100/115	100/120	125/107,5	125/112,5	125/117,5
310 36 1161 Garant Shim for pull-down system		XXX	XXX	XXX	XXX	XXX	XXX
Clamping height	mm	15	10	5	15	10	5
suitable for colour code							
Xpent size		0	0	0	1S	1S	1S

Type/shim height (W/H)		125/147,5	125/152,5	125/157,5	125/177,5	125/182,5	125/187,5
310 36 1161 Garant Shim for pull-down system		XXX	XXX	XXX	XXX	XXX	XXX
Clamping height	mm	15	10	5	15	10	5
suitable for colour code							
Xpent size		1	1	1	2	2	2

Pull-down insert — piece

Size 1 – **Hardened and coated.**
Size 0; 2 – **Hardened.**

Suitable for: Pull-down top jaw No. 361136.

Note: Pull-down inserts are held on to the pull-down jaws 361136 by magnets.

36 1162_1

36 1162 _0

36 1162_2

Type		0	1	2
310 36 1162 Garant Pull-down insert		XXX	XXX	XXX
Version		smooth, uncoated	smooth, coated	gripp

Gripp inserts

Suitable for: Allmatic jaws No. 361206 – 361354. GARANT Xpent top jaws No. 361128 and 361129.

Application: Serrated gripp insert, e.g. to clamp blanks. Smooth clamping insert with coating, e.g. for clamping pre-machined components. Serrated gripp insert, round, for drilling near to edges and for additional clearance under the workpiece. For workpieces with a large radius or chamfer between 3 and 8 mm.

Size 4 – For highly tempered materials and flame-cut blanks.
Size 5 – Coated for clamping pre-machined workpieces.
Size 6 – For drilling close to edges and for additional clearance under the workpiece.
Size 7 – For workpieces with a large radius or chamfer between 3 and 8 mm.
Size 1–3 – For clamping blank parts.

Optional extras:
Size 1–5 – Screw-in aid No. 361251_1

Type		1	2	3	4	5	6	7
34A 36 1160 Allmatic Gripp insert		(XXX)	(XXX)	(XXX)	(XXX)	(XXX)	(XXX)	(XXX)
Version		2 points	2 points	4 points	carbide	smooth	round	round
Height	mm	3.7 – 5.2	5.2 – 6.7	3.7 – 5.2	7.1 – 8.6	5.2 – 6.7	5.5	8
Dimension S1 – S5	mm	see 361210 / 361222						

Colour code: Xpent0 Xpent1-2

Closure stud and sealing cap

Suitable for:

36 1174 – Sealing pin for top jaws (10 pieces) and clamping screws 361135, 361126, 361133, 361130.

36 1175 – Sealing cap for top jaws (4 pieces) 361123-361125, 361127-361129, 361131, 361134, 361136.

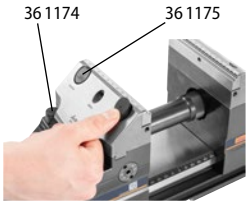
Material: Plastic

Application: To protect the screws and screw heads against chips and cooling lubricants, and provide increased worker protection when cleaning.

Note:

36 1174 – Can also be used for screw head with 8 AF and 10 AF for GARANT and Allmatic standard jaws.

36 1174



36 1175

AF			8	10
310 36 1174	Garant	Closure stud set, pack of 10	XXX	XXX
310 36 1175	Garant	Sealing cap, pack of 4	XXX	XXX
suitable for colour code				
Pack unit quantity (36 1174)			10	
Pack unit quantity (36 1175)			4	

Clamping claw

piece

Suitable for:

Type			CS0	CS1
310 36 1165	Garant	Clamping claw	XXX	XXX
B	mm		50	
H	mm		16	20
L	mm		56	
suitable for colour code				

36 1165

Spare crank

piece

Suitable for: 5-axis vice set No. 361100 and spindle No. 361119.

Type			8	10
310 36 1167	Garant	Crank	XXX	XXX
AF			8	10
L	mm		172	
suitable for colour code				

36 1167

Adapter plate

piece

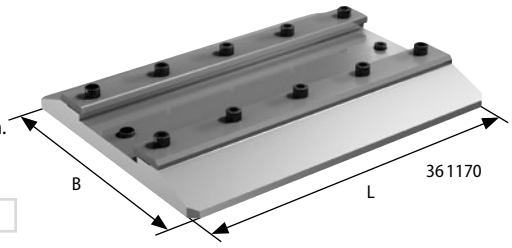
Suitable for: 5-axis vice set No. 361100 and base rails No. 361115.

Application: For optimally fastening the 5-axis vice to a zero point clamping system with pitch 200 mm.

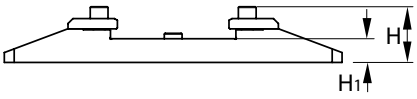
Supplied with: Includes clamping strip with socket-head screws

Optional extras: Clamping stud No. 360025 size 18M16 and size 18M16/138.

Note: Further sizes available on request.



36 1170



for type	310 36 1170 Garant Adapter plate	L mm	B mm	H mm	H_1 mm	Weight kg	Number of ZC holes	suitable for colour code
360	(XXX)	362	342	54.4	26	28	4	
440	(XXX)	442	342	54.4	26	34	10	
450	(XXX)	454	342	56.4	24	34.5	10	
550	(XXX)	554	342	56.4	24	42.5	6	

Garant Jaw quick-change system

Hardened base jaws (nitrided) (45 HRC).

Suitable for: 5-axis vice set No. 361100 and clamping module No. 361105 – 361110.

Optional extras: Top jaws No. 362644 – 362646.

Base jaw

piece

for type			100	125
31P 36 1132		Base jaw	XXX	XXX
suitable for colour code				

36 1132

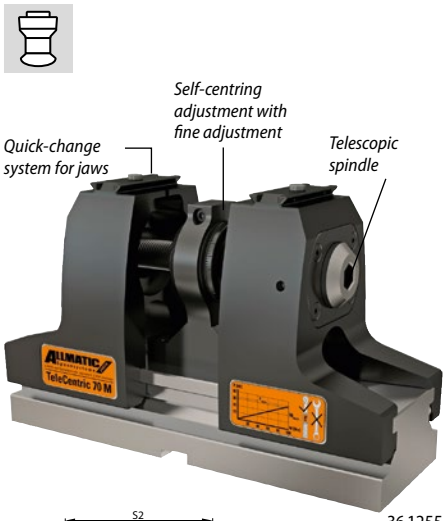
Colour code: Xpent0 Xpent1-2 Xtric 125

TeleCentric 5-axis centring vice

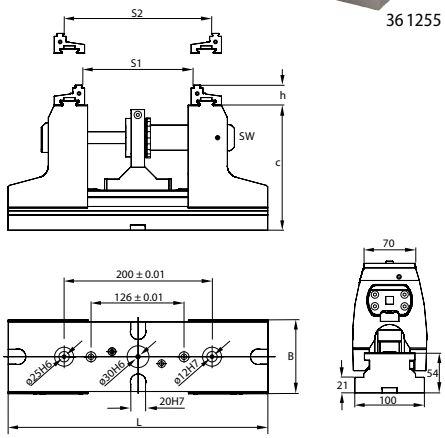
- Optimum for use on 5-axis machining centres.
- Conventional clamping and gripper clamping can be performed.
- Telescopic spindles and obstructive contours remain unchanged.
- Simple centre-reference programming with no displacement of the zero point.
- Accessibility of the workpiece irrespective of the clamping span.
- Symmetrical design = workpiece remains central and parallel - the dimensions of the material are distributed symmetrically.
- Thanks to the quick-release fastening, pairs of jaws can be changed within 10 seconds.
- Constant clamping force thanks to the low-maintenance telescopic spindle.
- Supplied as standard with 25H6 M10 mounting holes for zero-point clamping system with 200 mm reference module.
- Integral scaled ring for fine adjustment of the centre position.
- Clamping force 30 kN at 45 Nm linear.

Supplied with: Mounting plate for transport, hand crank, Quick Start guide.

Optional extras: Torque wrench No. 656050_120, hexagon screwdriver bit 643330_14, top jaws No. 361258 – 361264, clamps No. 360750 Gr. 125/160, alignment and fixing set No. 360530, clamping stud No. 360025 size 25M10 or 25M10/138.



36 1255

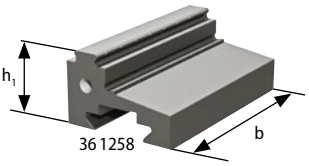


Type			70K	70M
34A **36 1255**	5-axis vice **TeleCentric**		XXX	XXX
S1		mm	16 – 85	49 – 150
S2		mm	66 – 135	99 – 200
L		mm	286	351
c		mm	168.9	
B		mm	94	
n H7		mm	20	
h		mm	27.1	
Clamping force up to maximum		kN	30	
maximum torque		N·m	45	
Weight		kg	17.5	19.5
Width across flats		mm	14	
Colour code for suitable accessories				

Top jaws

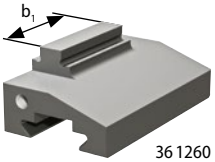
36 1258 – 3 mm contact surface, 4 mm clamping height.
36 1260 – 3.5 mm contact surface, 5 mm clamping height.
36 1261 – suitable Gripp inserts No. 361160, 361238 – 361250.

Suitable for: TeleCentric 5-axis vice No. 361255



36 1258

Type	34A 36 1258	34A 36 1260	b	b_1	h_1	suitable for colour code
	Top jaw					
	gripp	**smooth**	mm	mm	mm	
38	XXX	XXX	70	38	27.1	
70	XXX	XXX	70	70	27.1	
100	XXX	XXX	70	100	27.1	



36 1260

Jaw width	34A 36 1261	h_1	l	suitable for colour code
	Top jaws for Gripp inserts			
mm		mm	mm	
120	XXX	21	48.5	

36 1261

Type	34A 36 1262	b	b_1	h_1	Version	suitable for colour code
	Top jaw					
	soft	mm	mm	mm		
A	XXX	70	120	31.1	Aluminium	
S	XXX	70	120	31.1	Steel	

36 1262

Jaw width	34A 36 1263	h_1	l	suitable for colour code
	Zero jaw			
mm		mm	mm	
70	XXX	27	45.5	

36 1263

Type	34A 36 1264	b	b_1	h_1	suitable for colour code
	Top jaw				
	prisma	mm	mm	mm	
P	XXX	70	70	29.1	

36 1264

Accessories

Application: For attaching to the machine table through the centre holes in the lower part.

Supplied with: 2 screws, 2 T-nuts, 2 tenons.

Table T-slot size		mm	14	16	18
34A **36 1268**	Alignment and fixing set		XXX	XXX	XXX
suitable for colour code					

36 1268

Colour code: TeleCentric

NC8 NC high pressure vice

Compact size: Optimum ratio between clamping range and overall length.
The clamping force can be pre-set **without using tools**: **in 11 steps:**
Jaw width 90 mm, **in 4 steps:** Jaw width 125 / 160 / 200 mm.
Particularly rigid base body of GJS-60, **top and bottom faces ground; pairing accuracy 0.02 mm.**

Feature:
Fully enclosed low-maintenance nitrided spindle!

- Increased service reliability.
- Optimised swarf protection.
- Minimised cleaning requirement.

Size 90–125MX – **With 25H6 M10 holes at 200 mm pitch for zero-point clamping system.**
Size 200 – Base body same as size 160.
Size H200 – Heavy Duty for very heavy machining.

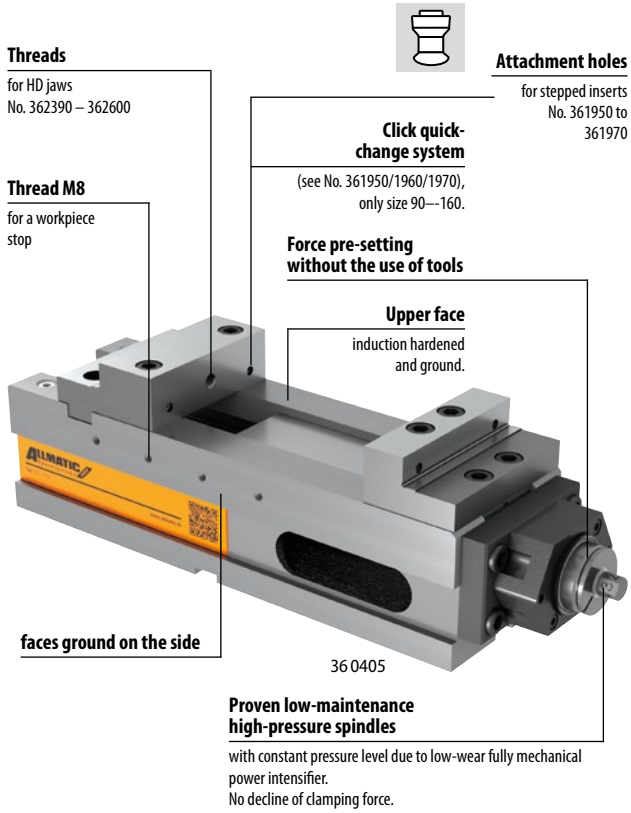
Application: Can be used horizontally or laterally, **since the side faces are ground to an accuracy of -0.05 mm.**

Supplied with:
2 stepped jaws (= standard!), 1 crank handle, 4 table clamps.

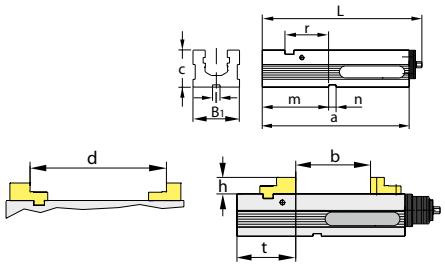
Optional extras:
Size 90–125LX – Clamping stud No. 360025 - 25 M10.
Size 125MX; 125LX – Front jaws 361140 – 361150.

Note:
- Dimensions of the NC 8 are identical to the Allmatic TC / LC.
- Jaws interface compatible with TC / LC.
- NC 8 (No. 360405) supersedes the products LC (No. 360500) and TC (No. 360400).
- TC / LC are no longer available!
- **Sizes 125 MX and 125 LX are supplied with jaws 361295 125 and 361296 125.**

Size 90; H200 – ■ **No end face holes for extensions included!**



Type		90	125M	125MX	125L	125LX	160	200	H200
34A 36 0405	NC8 NC high pressure vice	XXX	XXX	XXX	XXX	XXX	XXX	(XXX)	(XXX)
Clamping force up to maximum	kN	28	40	40	40	40	60	60	80
Weight	kg	15	35	35	43	43	56	60	85
L	mm	339	483	483	615	615	615	615	615
a	mm	283	398	398	530	530	530	530	530
B_1 –0.05	mm	90	126	126	126	126	164	164	202
b	mm	0 – 126	0 – 182	0 – 182	0 – 314	0 – 314	0 – 246	0 – 246	0 – 246
c –0.02	mm	80	100	100	100	100	115	115	140
d	mm	91 – 217	131 – 313	131 – 313	87 – 445	87 – 445	189 – 435	189 – 435	189 – 435
h	mm	34	39.5	39.5	39.5	39.5	49.8	60	60
l H7	mm	20							
m	mm	112	180	180	278	278	234	234	234
n H7	mm	20							
r ±0.015	mm	73	118	118	216	216	164	164	164
t	mm	97	144	144	144	144	164	164	164
Colour code for suitable accessories		■	■	■	■	■	■	■	■



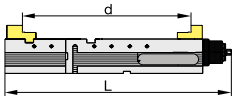
Example: No. 36 0405 with 36 0420

Extensions

Suitable for: NC 8 and Titan.
Supplied with: 2 table clamps and connecting screws.

for type		125	160
34A 36 0420	Vice base extension	XXX	XXX
d	mm	492	675
L	mm	659	857
suitable for colour code	mm	■ ■ ■	■ ■

36 0420



Accessories

Supplied with: 4 screws, plain washers, 4 T-nuts, 2 tenons.

Table T-slot size	mm	12	14	16	18	22
34A 36 0530	Alignment and fixing set	XXX	XXX	XXX	XXX	XXX

36 0530

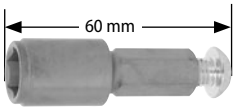
for type		90	125-200	125/200
34A 36 0406	Angled gear drive	XXX	XXX	–
34A 36 0800	Spare crank	–	–	XXX
suitable for colour code		■	■	■ ■ ■ ■ ■

36 0406

36 0800

Application: For screwing on to the hand crank where access is difficult.

34A 36 0850	Hand crank extension	XXX



36 0850

Colour code: ■ NC8 ■ TC ■ Titan ■ HiPo ■ LC ■ LC-Garant

Garant HiPo clamp NC high-pressure vice

- **Pairing accuracy 0.02 mm.**
- Alignment dimensions compatible with other manufacturers.
- Universal design accepts wide variety of jaw systems.
- Slides induction hardened.
- Fully enclosed spindle (minimises cleaning requirement).
- Tapped holes on each side for component backstop.
- Including holes 18M16 for zero point clamping system pitch 200 mm.
- **All faces apart from the end face ground:** Can be used horizontally or laterally.
- Angled gear drive can be attached (**no need** to dismantle for the desired force setting.).
- Fully enclosed and nitrided spindle.
- Tapped hole for workpiece backstop.

Supplied with:

Size 125X – Including stepped jaws 361295 125 and 361296 125, 4 stepless adjustable clamps and hand crank.

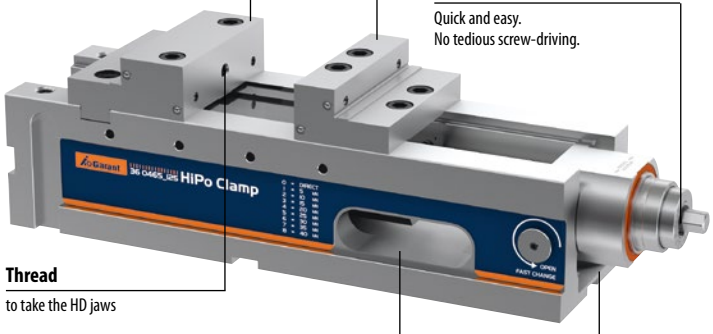
Size 125; 160 – Including stepped jaws No. 360468 and 360469, 4 stepless adjustable clamps and hand crank.

Optional extras:
- Accepts popular makes of jaws size 125, e.g. No. 361400 – 361660, No. 362390 – 362600, No. 361295, No. 361296.
- For tenon and Tee-nut set see No. 360530.
- For workpiece backstop, hand crank see No. 360555; 360800.
- For Click system stepped jaws see No. 361952; 361962; 361972.
- Clamping stud No. 360025.

Note:
- For a suitable 125 base body extension see No. 360467_125 in the spare parts list.
- Size 125X is supplied with jaws 361295 125 and 361296 125. Can be used with Xpent front jaws.
- The suitable base body extension 160 is No. 360420 160

Spindle change
Quick and easy.
No tedious screw-driving.

Stepped reversible jaw



360465

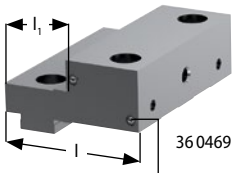
Thread
to take the HD jaws

Outlet opening
for coolant and chips

With mechanical power intensifier
Clamping pressure fine adjustment over 8 steps. No tedious screwing.

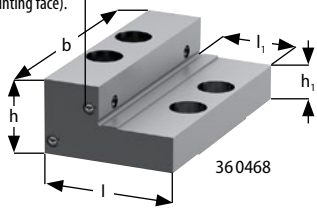
Quick adjustment
of the clamping force by hand.
No additional tools required.

Type		125	125X	160
3IF 36 0465	NC high-pressure vice HiPo Clamp **with power intensifier**	XXX	XXX	XXX
Clamping force up to maximum	kN	40	40	60
Weight	kg	35	35	65
L	mm	512	512	645
a	mm	424	424	560
B	mm	125	125	160
b	mm	0 – 182	0 – 182	17 – 263
c –0.02	mm	100	100	115
d	mm	131 – 313	131 – 313	187 – 433
h	mm	39.5	39.5	49.8
l H7	mm		20	
m ±0.02	mm	180	180	234
n H7	mm		20	
o –0.02	mm		40	
p H7	mm		20	
r ±0.015	mm	118	118	164
s – 0.02	mm	62	62	70
t	mm	144	144	164
Colour code for suitable accessories				



360469

Sprung balls
Quick change of the click strips
(workpiece mounting face).

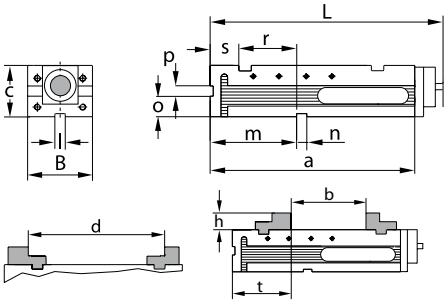


360468

Stepped jaws

Suitable for: NC high pressure vices No. 360400 / 0465 / 0500 / 0510 / 1301.
Material: Hardened steel, ground surfaces.
Application: Accepts all high pressure jaws No. 362390 – 362600.

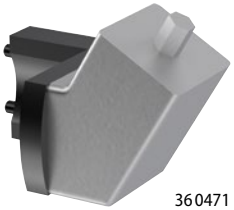
for type		125	160
3IF 36 0468	Stepped jaw **movable**	XXX	XXX
3IF 36 0469	Stepped jaw **fixed**	XXX	XXX
b	mm	125	160
h	mm	39.5	49.8
h_1	mm	20	25
l (36 0468)	mm	70	96
l (36 0469)	mm	92	104
l_1 (36 0468)	mm	40	64
l_1 (36 0469)	mm	43	54
suitable for colour code (36 0468)			
suitable for colour code (36 0469)			



Angled gear drive

Suitable for: NC high pressure vice No. 360465.

for type		125	160
3IF 36 0471	Angled gear drive	XXX	XXX
suitable for colour code			



360471

Colour code: HiPo | Duo | LC | LC-Garant | NC8 | TC | Titan | Titan 2

Workpiece back-stop 3-dimensional

- Quick and stepless adjustment.
- M8 mounting for T-nuts or direct mounting.
  Size 300 – Double stop.

Material: Anodised aluminium.
Application: For use on milling and drilling machines.
Optional extras: T-nuts with M8 thread see No. 370520 size 12 – 18.

36 0430_150

36 0430_300

36 0435

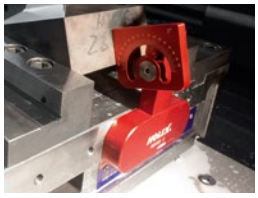
Type		125	150	300
38F 36 0430	Workpiece back-stop 3-dimensional	–	XXX	XXX
32E 36 0435	HOLEX Workpiece back-stop 3-dimensional	XXX	–	–
Overall height	mm	220	210	350
suitable for colour code				

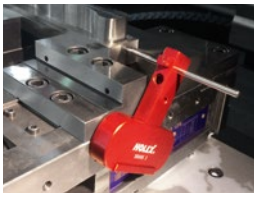
HOLEX Component backstop – Magnetic

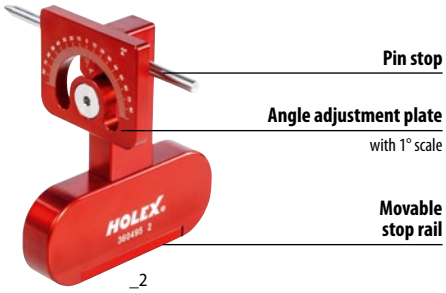
- Stepless and quick adjustment.
- The stop can be fitted and removed quickly.
  Size 1 – Up to 5 times higher clamping force than with standard magnets due to Samarium-Cobalt core.
  Size 2 – Multi-function stop with angular adjustment (Fig.1) or as a pin stop (Fig. 2).

Material: Anodised aluminium.
Application: On all magnetic surfaces such as vices, measuring devices, drilling machines, and lathes etc.

_1


36 0495_2 Angle stop


36 0495_2 Pin stop

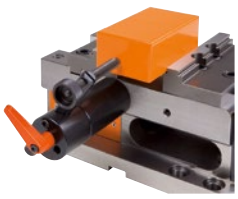


_2

Type		1	2
32E 36 0495	Component backstop, magnetic	XXX	XXX
suitable for		Vices with magnetic surfaces	

ALLMATIC Allmatic workpiece back-stop

Suitable for: All Allmatic and GARANT NC vices.


can be swung away

36 0555

34A 36 0555	Component backstop	XXX
suitable for colour code		

Suitable for: All basic types and all vices with M8 thread.
Application: Can be positioned with high repeat accuracy; can be pivoted out of the way.

36 2650

34A 36 2650	Component backstop	XXX
suitable for colour code		

Colour code: HD Allmatic, NC8, Basic, Centro Gripp, Duo, Duo Plus, HiPo, LC, LC-Garant, LCV125G, TC, Titan 2, Titanium, T-Rex

NC high pressure vice – version LC

- Compact size; optimum ratio between jaw span and overall length. **Clamping force can be checked visually by the 4 ring marks.** Maximum clamping pressure reproducible using integral fixed stop.
- Particularly rigid base body made of spheroidal graphite iron, top and bottom faces; pairing accuracy 0.02 mm.
- **Supplied with 25H6 M10 holes for zero point clamping systems, pitch 200 mm.**

Feature:

- **Click quick-change system** for parallel inserts / jaws. Short set-up times and high flexibility.
- Fully enclosed and nitrided spindle (increased operational reliability, optimised swarf protection, minimised cleaning requirement).

Application: Universal clamping system for machining centres.

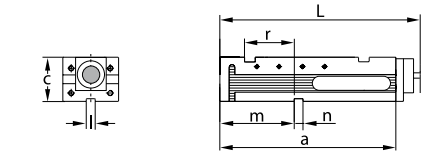
Supplied with: 2 stepped jaws, 1 crank handle, 4 steplessly adjustable clamps, and 1 hexagon L-wrench.

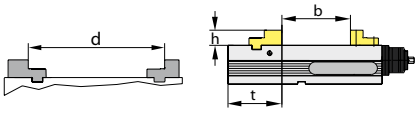
Optional extras:

- For tenon and Tee nut set see No. 360530.
- See No. 360555; 352650 and 360800 for spare component backstop / spare crank handle.
- See No. 360850 for hand crank extension.
- See also No. 361380 – 361770 and 362390 – 362600 for other jaws.
- For spare stepped jaws see No. 361400; 361420 and 361295; 361296.
- Clamping stud No. 360025.

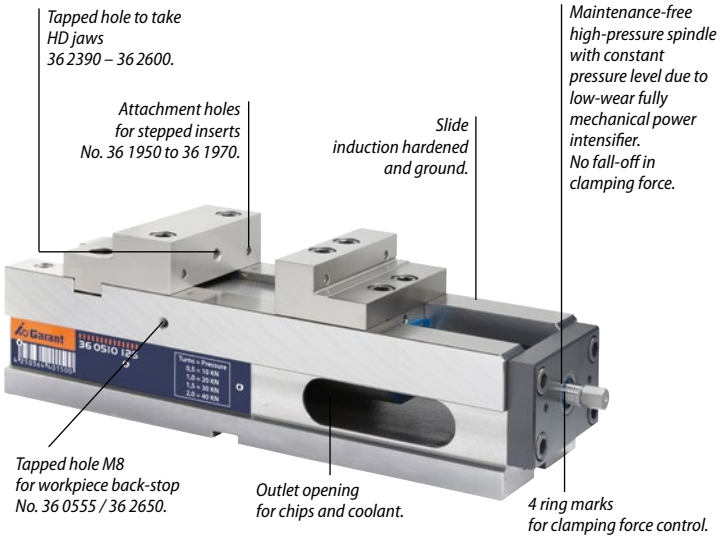
Note:

- Click system stepped inserts for drilling close to the edge of flat components, see No. 361950 / 1960 / 1970.
- For stepped jaws see No. 361400 / 1420 / 1295 / 1296.



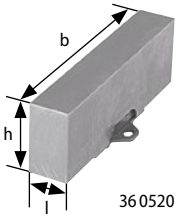


Type		125
31F 36 0510	Garant NC high pressure vice version LC	XXX
Clamping force up to maximum	kN	40
Weight	kg	34
L	mm	446
a	mm	398
b	mm	0 – 182
c –0.02	mm	100
d	mm	131 – 313
h	mm	39.5
l H7	mm	20
m	mm	180
n H7	mm	20
r ±0.015	mm	118
t	mm	144
Colour code for suitable accessories		



Jaws with Click quick-change system – Soft jaw

Application: For manufacturing form jaws.



36 0520

for type		125
31F 36 0520	Pair of soft jaws **Case-hardened steel 21MnCr5**	XXX
b	mm	125
h	mm	39.8
l	mm	22
for type		125
suitable for colour code		

Application: For clamping soft materials.

Note: Accepts Click parallel inserts No. 361950 / 1960 / 1970.

36 0525

for type		125
31F 36 0525	Pair of serrated jaws **Steel hardened**	XXX
b	mm	125.6
h	mm	40.1
l	mm	12
suitable for colour code		

Vee jaws

Application: Clamping round parts, 16 – 74 mm vertically, 12 – 40 mm horizontally.

36 0540

for type		125
31F 36 0540	Vee jaws pair **Steel hardened**	XXX
b	mm	125.6
h	mm	39.8
l	mm	15
suitable for colour code		

Angled gear drive

Application: For fitting on to end of spindle where access is difficult.

36 0580

for type		125
34A 36 0580	Angled gear drive	XXX
suitable for colour code		

Colour code: LC-Garant · TC · LC · Titan · Basic · LCV125G · NC8 · Titan 2

HOLEX NC high-pressure vice

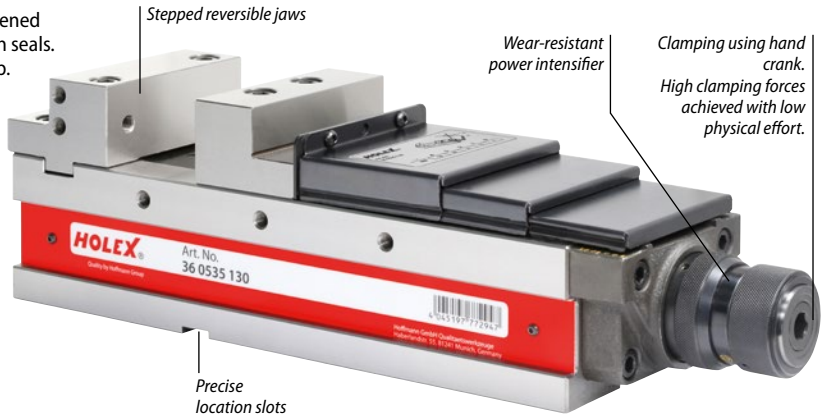
Sturdy base body of spheroidal cast iron, slides and base area hardened and ground. Fully enclosed spindle, spindle chamber enclosed with seals. Maximum clamping pressure reproducible using integral fixed stop.

- Flatness of the base body ≤ 0.01 mm.
- With mechanical power intensifier, clamping pressure pre-selectable in 5 steps.
- Tapped holes in the side for workpiece backstops.

Application: Versatile clamping unit for machining centres.

Supplied with: 2 stepped jaws, 1 crank handle AF 14, 1 hexagon L-wrench and 4 table clamps.

Note: Alignment dimensions not compatible with those of other manufacturers.



Type	32P 36 0535 NC high-pressure vice	Clamping force up to maximum	Weight	L	a	B	b	c	d	h	l H7	m	n H7	r	t	Colour code for suitable accessories
		kN	kg	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	
130	XXX	50	40	516	410	131	0 – 256	95	66 – 315	52	20	139	20	111	79	

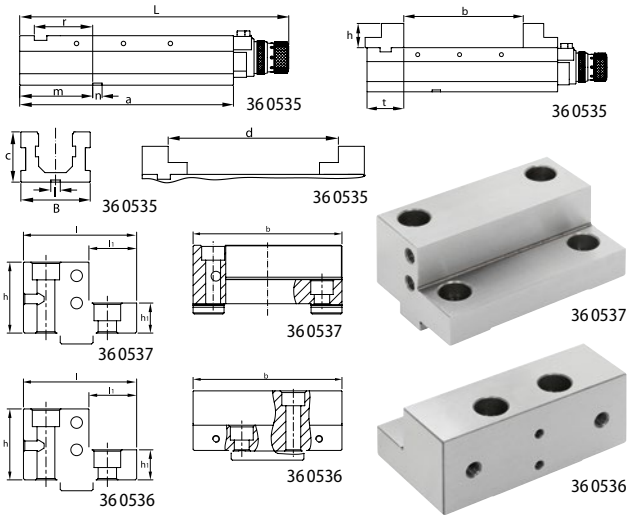
Stepped jaws

Hardened and ground parallel jaws.

Suitable for: NC high pressure vice No. 360535.

Application: For fitting front jaws No. 360538 / 0539 / 0541.

Type		130
32P 36 0536	Stepped jaw **movable**	XXX
32P 36 0537	Stepped jaw **fixed**	XXX
b	mm	130
h (36 0536)	mm	52
h (36 0537)	mm	52
h_1 (36 0536)	mm	22
h_1 (36 0537)	mm	22
l (36 0536)	mm	74
l (36 0537)	mm	83
l_1 (36 0536)	mm	30
l_1 (36 0537)	mm	35
suitable for colour code		



Front jaws

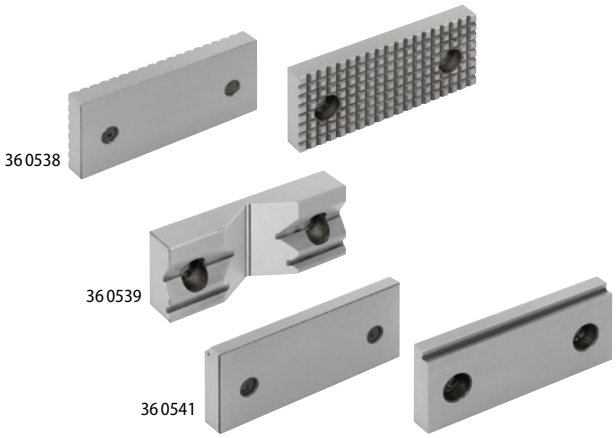
Suitable for: NC high pressure vice No. 360535.

Application: Expansion of the clamping capabilities

for jaw width	mm	130
32P 36 0538	Pair of clamping jaws with serrated faces	XXX
suitable for colour code		

for jaw width	mm	130
32P 36 0539	Prismatic jaw (piece)	XXX
suitable for colour code		

for jaw width	mm	130
32P 36 0541	Pair of clamping jaws with stepped upper edge 5 mm × 5 mm	XXX
suitable for colour code		



Spare crank

External hexagon with 14 mm.

Suitable for: NC high pressure vice No. 360535.

for jaw width	mm	130
32P 36 0542	Crank	XXX
suitable for colour code		

Spare clamps

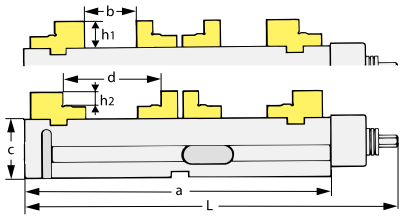
Suitable for: NC high pressure vice No. 360535.

for jaw width	mm	130
32P 36 0543	Set of clamps **2 pieces**	XXX
suitable for colour code		

Colour code: NC-Holex

NC high-pressure vice – Duo 2-component vice

All stepped jaws reversible.



Particularly rigid body made of spheroidal graphite iron, ground on top and bottom faces.
Pairing accuracy 0.02 mm.

Function: Insert first piece at **clamping position I** and turn the crank until movable jaw touches the component, then insert second part at **clamping position II** and continue to turn the crank all the way to the stop.

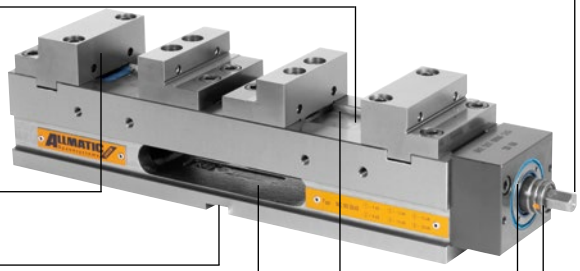
Application:
- **For horizontal use**.
- Clamping of **2 identical parts,** dimensional differences (± 3 mm).

Supplied with: 4 stepped jaws, 1 crank handle, 4 steplessly adjustable clamps, and 2 hexagon L-wrenches.

Note:
- **Overall length L remains unchanged** (reduced risk of collisions).
- **Accessories see No. 360530 / 360570 and No. 361400, 361440, 361660 – 361970.**
- **Always clamp 2 workpieces!**
- **With 25H6 M10 holes at 200 mm pitch for zero-point clamping systems.**

Clamping using crank.
High clamping forces achieved with low physical effort. Required clamping force can be pre-selected.

Clamping positions I and II, induction hardened.



Click quick-change system
(see No. 36 1950 / 1960 / 1970).

Precision tenon slot (milled).

Outlet opening
for chips and coolant.

Spindle chamber
with profile wiper and spindle seal.

Well-proven maintenance-free high-pressure spindle
with constant pressure level due to low-wear mechanical power intensifier. No reduction in clamping force.

Threads
for angled gear drive (angle drive on request)

Type		90
34A 36 0600	NC high pressure vice **Duo**	XXX
Clamping force up to maximum	kN	28
Weight	kg	24
L	mm	482
a	mm	400
b	mm	0 – 64
c –0.02	mm	80
d	mm	56 – 120
h_1	mm	34
h_2	mm	8
Tenon slots	mm	20H7
Colour code for suitable accessories		

NC high-pressure vice – Duo Plus 2-component vice

Rigid base body made of GGG60, slides induction hardened and ground.

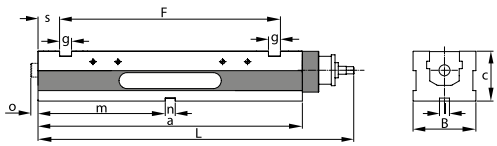
Function: Place and secure the first and second component to the mobile jaws.
If the crank is turned past the engagement point, the clutch disengages.
The pressure spindle activates the mechanical power intensifier.

Application:
- For **horizontal** use.
- **Capable of clamping 2 different workpieces** or clamping 2 identical parts. Dimensional differences ± 2.5 mm (workpiece 1 to workpiece 2).
- **Conventional and gripper clamping using carrier jaws or a combination of the two.**

Supplied with: 4 steplessly adjustable clamps, 3 hexagon L-wrenches, 1 socket 14 AF.

Optional extras: Clamping jaws No. 361400 – 361440, 361600, 361660.
Parallel inserts No. 361950, 361960, 361970. Gripp set No. 361345, 361350.
Torque wrench No. 656050 size 60.

Note:
- **Overall length L remains unchanged** (reduced collision zones).
- **For accessories see No. 360530 / 0570 and No. 361400, 361440, 361600 – 361970.**
- **Always clamp 2 workpieces!**



Precise location slots
Precise longitudinal and transverse location slots in the base for optimum alignment on the machine table.

Outlet opening
for chips and coolant.

Tapped hole in the side
for a workpiece back-stop.

Clamping capacity can be adjusted
by changing the spindle position.

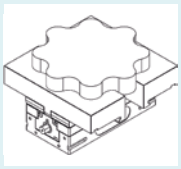
Fully enclosed maintenance-free high-pressure spindle,
minimal cleaning requirement.

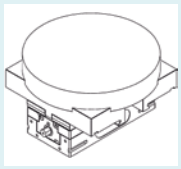
Type		125
34A 36 0605	NC high pressure vice **Duo Plus**	XXX
Clamping force up to maximum	kN	40
Torque	N·m	40
Weight	kg	40
L	mm	633
a	mm	530
B	mm	126
c	mm	100
F	mm	443
g	mm	24
l	mm	20
m	mm	255.2
	mm	20
o	mm	0 – 15
s	mm	43.2
Colour code for suitable accessories		

Colour code: Duo Duo Plus

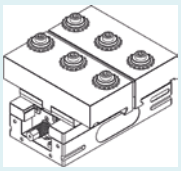
What are the advantages of a quick-change system for jaws?

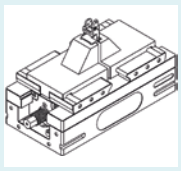
The system offers very high precision, flexibility and speed.
Your vices need to be fitted with the base jaws only once,
you can then enjoy the very high flexibility of the system.



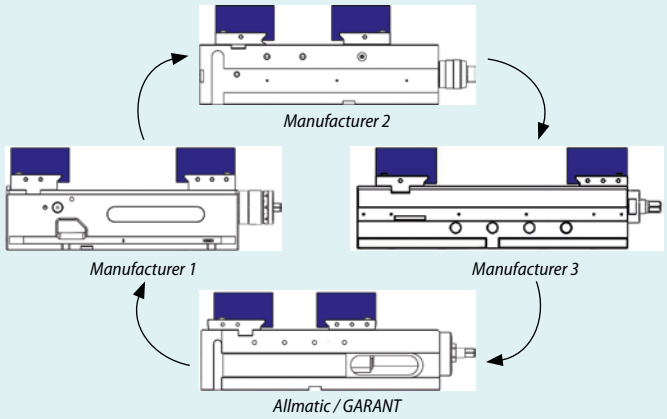


Even wide parts can be securely clamped due to the extra wide top jaws. Can also be used as a stop for clamping profiles of blank parts and finished parts.





No annoying attachment holes and an enormous height allow it to be used for virtually any clamping task. For example, 5-axis machining and use as a jig.



Garant Quick-change system for jaws

Suitable for: **Virtually all Allmatic and GARANT vices.**
Application: Base jaws for fitting to the appropriate vice in conjunction with the appropriate quick-change top jaws.

Base jaws — pair

Hardened base jaws (nitrided) (45 HRC).
Supplied with: 1 **pair** of base jaws.

36 2632

			Suitable for:
31P 36 2631	Base jaws for Allmatic T-Rex	(XXX)	Allmatic T-Rex No. 361202 size 125
31P 36 2632	Base jaws for Allmatic CentroGripp	(XXX)	Allmatic CentroGripp No. 361180 size 125
31P 36 2634	Base jaws for Allmatic Titan	(XXX)	Allmatic Titan / Titan 2 No. 361302 size 125K / size 125M / size125L

for type		90	125	160
31P 36 2633	Base jaw for vice	(XXX)	(XXX)	(XXX)
Suitable for:		Allmatic NC8 No. 360405 size 90.	Allmatic NC8 No. 360405 size 125, GARANT No. 360465 / 361290 size 125, GARANT LC No. 360510 size 125.	Allmatic NC8 No. 360405 size 160, GARANT No. 360465 size 160.

Further vices available on request

Vice with base jaws fitted.

Top jaws — piece

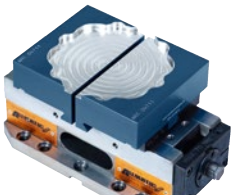
Top jaws in a variety of widths of medium-strength anodised aluminium or case-hardened steel.
Function: Quick and easy to click the top jaws on to the base jaws.
No need to spend time tediously bolting the jaws on to the vice
Advantage:
- Use of jaws irrespective of the manufacturer.
  Exchange of top jaws from Allmatic on vices made by Garant, Röhm, Gressel etc.
- Setting up in very short time – quick change of top jaws.
- Increase in machine productive time by minimising set-up time.
- Extremely flexible in use.

Supplied with: 1 top jaw.

Further sizes available on request

36 2644_200

Jaw width	mm	65	80	90	100	125	160	200	250	300
31P 36 2642	Top jaw for jaw width 90 mm, aluminium	XXX	–	XXX	–	–	XXX	–	–	–
31P 36 2643	Top jaw for jaw width 90 mm, steel	(XXX)	–	(XXX)	–	–	(XXX)	–	–	–
31P 36 2644	Top jaw for jaw width 125 mm, aluminium	–	XXX	–	–	XXX	XXX	XXX	XXX	–
31P 36 2646	Top jaw for jaw width 125 mm, steel	–	(XXX)	–	–	XXX	(XXX)	(XXX)	(XXX)	–
31P 36 2647	Top jaw for jaw width 160 mm, aluminium	–	–	–	XXX	–	XXX	–	–	XXX
31P 36 2648	Top jaw for jaw width 160 mm, steel	–	–	–	(XXX)	–	(XXX)	–	–	(XXX)
h (36 2642, 36 2643)	mm	36	–	36	–	–	36	–	–	–
h (36 2644, 36 2646, 36 2647, 36 2648)	mm	–	45	–	45	45	45	45	45	45
l (36 2642, 36 2643)	mm	77	–	77	–	–	77	–	–	–
l (36 2644, 36 2646)	mm	–	98	–	–	98	98	98	98	–
l (36 2647, 36 2648)	mm	–	–	–	125.5	–	125.5	–	–	125.5



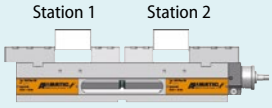
Removal lever key

East-grip handle of aluminium, tip of steel.
Application: For quick and easy disassembly of top jaws from base jaws.

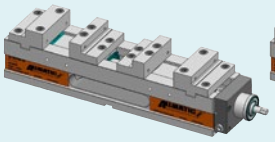
31P 36 2651	Removal lever key	XXX

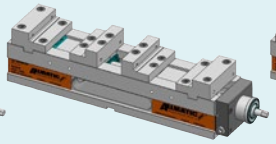
GALLERY Duo Plus / Centro Gripp

Duo Plus (clamping range can be adjusted up to 25 mm).

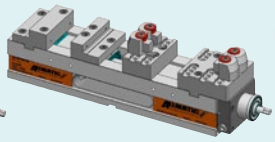


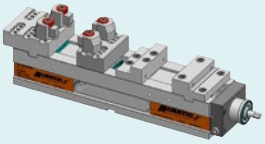
Stepped jaws





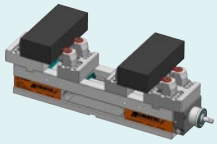
Combined clamping



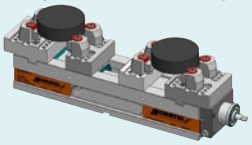


	Station 1	Station 2	Station 1	Station 2	Station 1	Station 2	Station 1	Station 2
Capacities	0 – 89 mm	0 – 89 mm	43 – 172 mm	43 – 172 mm	0 – 89 mm	10 – 200 mm	10 – 200 mm	0 – 89 mm
Clamping range with spindle adjustment	0 – 64 mm	50 – 114 mm	43 – 147 mm	93 – 197 mm	0 – 64 mm	60 – 225 mm	10 – 175 mm	93 – 197 mm

Carrier jaws with rectangular workpiece

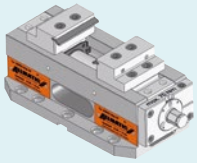


Carrier jaws with round workpiece

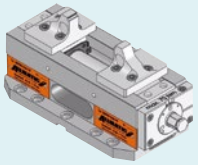


	Station 1	Station 2	Station 1	Station 2
Capacities	10 – 202 mm	10 – 202 mm	Ø 60 – 220 mm	Ø 60 – 220 mm
Clamping range with spindle adjustment	10 – 175 mm	60 – 225 mm	Ø 60 – 190 mm	Ø 80 – 240 mm

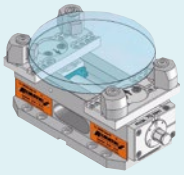
Centro Gripp



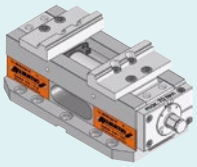
0 – 138 mm



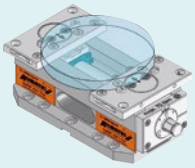
19 – 172 mm



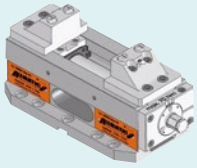
○ 100 – 230 mm
▭ 0 – 195 mm



9 – 256 mm



○ 80 – 250 mm
▭ 25 – 247 mm



○ 55 – 110 mm
▭ 22 – 286 mm

NC high-pressure vice Centro Gripp – 5-face blank component machining

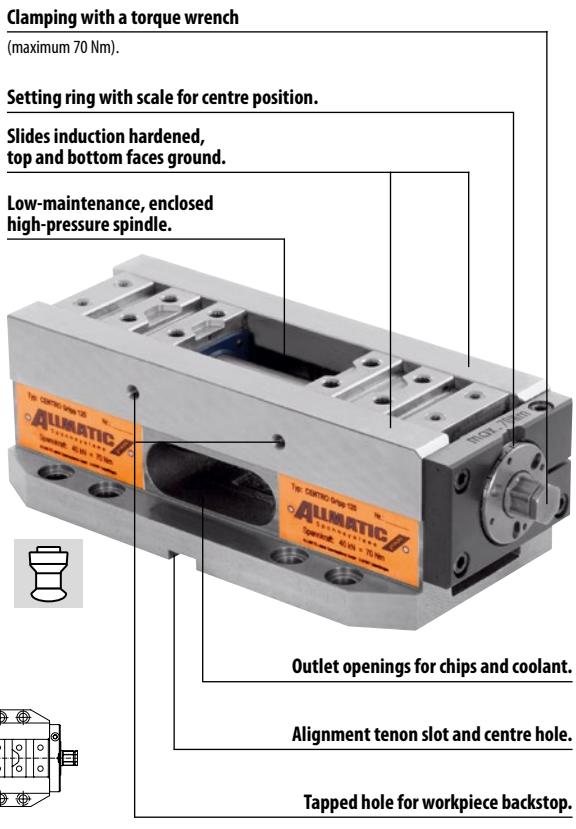
Guide track induction hardened, top and bottom faces ground.
With 25H6 M10 holes for zero point clamping system, pitch 200 mm.
Feature: Enclosed spindle, high swarf protection, minimal cleaning requirement.

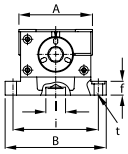
Function:
- Spindle with integral power intensifier.
- Clamping with adjustable torque wrench (18 – max. 70 Nm).
- Clamping centre adjustable.
- Repetition accuracy ± 1/100 mm for angular workpieces.

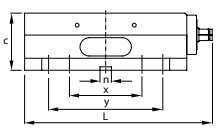
Application: In conjunction with various jaws it can be used for conventional clamping, clamping of smooth-faced workpieces, and grip clamping.

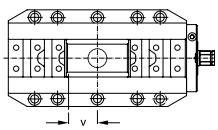
Supplied with: Hexagon L-wrench size 8, hexagon L-wrench size 6, hexagon socket 20AF-1/2 inch, 6 screws, 2 ring spanners 20AF.

Optional extras:
- Gripper inserts No. 361238 – 361250 and No. 361160.
- Torque wrench No. 656050 size 120.
- Extension base No. 361230 size 125.
- Stepped jaws No. 361215.
- Carrier jaw, pivoting, No. 361207 size 125.
- Carrier jaw Uni-Gripp set, pivoting, No. 361209 size 125.
- Jaw No. 361222 size 125 and No. 361227 size 125.
- Universal gripper set No. 361345 size 125.
- Pull-down jaws No. 361229 size 125.
- Prismatic jaw No. 361185 size 125.
- Jaw blank No. 361186 size 125.
- Gripper jaw No. 361218.
- Pair of parallel inserts No. 361223 size 125.
- Clamping studs No. 360025 size 25M10 and size 25M10/138.









Type	34A 36 1180 NC high pressure vice Centro Gripp	Clamping force up to maximum	Torque	Weight	A	B	c	f	i	l H8	L	n H7	Ø t	Travel distance v	x	y	Colour code for suitable accessories
		kN	N·m	kg	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	
125	XXX	40	70	19.5	112	154	100	21	129; 130	Ø 30	329	20	13	46	127	200	

Colour code: Centro Gripp

Vee jaws / jaw blank for Centro Gripp

Suitable for: Centro Gripp No. 361180.

Vee jaws — piece

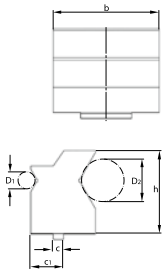
Vee angle 120° – axis height 53 mm on both sides.
The jaws open sufficiently to allow the workpiece to be removed upwards - even at maximum ∅.

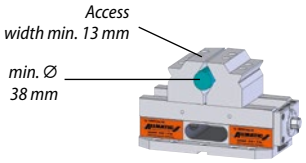
Material: Steel hardened and ground.

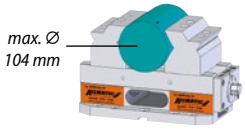
Application: For clamping cylindrical components.

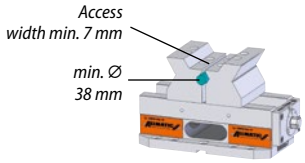
for type	34A	36 1185	b	c	c_1	h	D_1	D_2	suitable for colour code
		Vee jaw for Centro Gripp	mm	mm	mm	mm	mm	mm	
125		XXX	124.4	12	39	81	17 – 42	38 – 104	

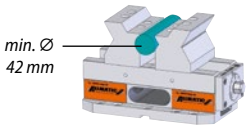
36 1185









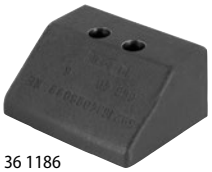


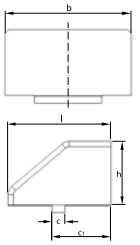
Jaw blank — piece

Material: GGG40 – can be hardened.

Supplied with: Fastening screws.

for type	34A	36 1186	b	c	c_1	h	l	for type	suitable for colour code
		Jaw blank for Centro Gripp	mm	mm	mm	mm	mm		
125		XXX	124	12	54	58	94.5	125	


36 1186



NC high-pressure vice – T-Rex, 5-face blank component machining

Top and bottom faces ground. **With 25H6 M10 holes at 200 mm pitch for zero-point clamping systems.**

Suitable for: Fixed carrier jaws No. 361206 / 1208.
Movable carrier jaws No. 361207 / 1209.

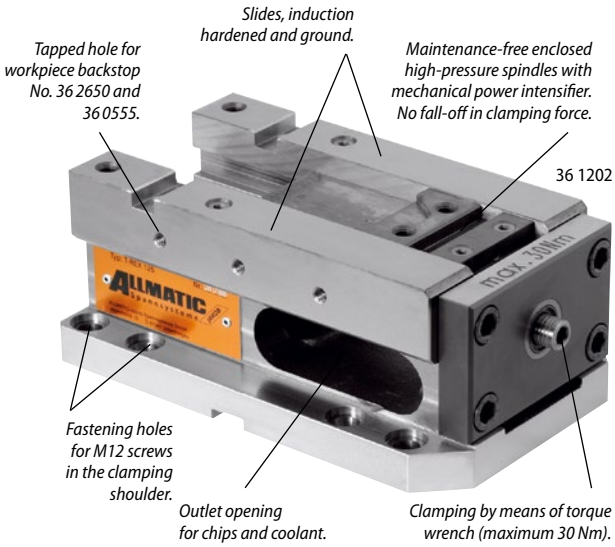
Function: **Clamping using adjustable torque wrench (maximum 30 Nm)**, requiring only minimal lost clearance around the component(in connection with jaws / gripper inserts). **Using special high pressure spindle and mechanical power intensifier.**

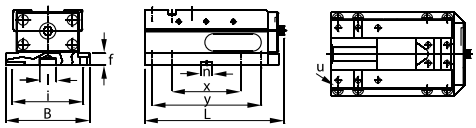
Feature: Sturdy, compact base body (GGG 60) with large capacity.
Fully enclosed and nitrided spindle (increased operational reliability, optimised swarf protection, minimised cleaning requirement).

Application: Quick and secure clamping of **flame-cut and saw-cut blanks** by penetration of **hardened replaceable gripper insert spikes** into the workpiece. Suitable for all materials up to strength approx. 1000 N/mm² (except for hardened materials).

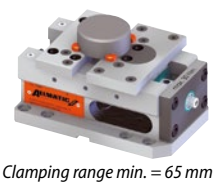
Supplied with: 4 securing bolts, hexagon screwdriver bit 3/8 inch.
Additional 3 hexagon L-wrenches (5 / 8 / 10 AF).

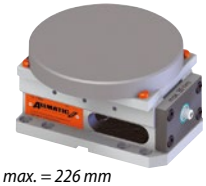
Optional extras:
- For extension base see No. 361230 size 125.
- For gripper inserts see No. 361238 - 361250; 361260
- For stepped jaws see No. 361210; 361215.
- For fixed carrier jaw see No. 361206 size 125.
- For pivoting carrier jaws see No. 361207 size 125.
- For universal gripper set carrier jaw see No. 361208 size 125.
- For movable pivoting universal gripper set carrier jaws see No. 361209 size 125.
- For universal gripper set see No. 361345 size 125.
- For pull-down jaws see No. 361228; 361229 size 125.
- Torque wrench No. 656050 size 60
- For gripper jaws see No. 361217; 361218.
- For stepped jaws see No. 361223 size 125.
- Clamping stud No. 360025, 25M10 or 25M10/138.
- Alignment and fixing set No. 360530.





Application examples:


Clamping range min. = 65 mm


max. = 226 mm

min. = 26 mm

max. = 184 mm

Type	34A	36 1202	Clamping force up to maximum	Torque	Weight	L	B	f	i	l H8	n H7	u	x	y	Colour code for suitable accessories
		NC high pressure vice T-Rex	kN	N·m	kg	mm	mm	mm	mm	mm	mm	mm	mm	mm	
125		XXX	40	30	18	256	154	21	130	Ø 30	20	13	127	200	

Colour code: Centro Gripp T-Rex

Carrier jaws / stepped jaws / clamping jaws / gripp jaws for T-Rex / Centro Gripp

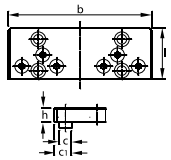
Carrier jaws for bolt-on gripp inserts

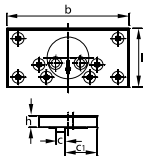
piece

Application: Carrier jaws for standard gripp inserts No.361238 / 1240 / 1245 / 1250 (not suitable for Universal set Grip No. 361345 size 125 and No.361350 size 125). Mobile pivoted jaws compensate non-parallel clamping faces. Gripp inserts can be screwed into a variety of hole patterns, for secure clamping of various geometries.

36 1206

36 1207





for type		125	b mm	c mm	c_1 mm	h mm	l mm	Clamping range maximum round mm	Clamping range minimum round mm	Clamping range maximum square mm	Clamping range minimum square mm	suitable for colour code
34A 36 1206	Carrier jaw for gripp inserts, for T-Rex **fixed**	XXX	165	14	20	16	59	190	80	185	26	
34A 36 1207	Carrier jaw for gripp inserts, for T-Rex / Centro Gripp **pivoting**	XXX	165	12	43.5	16	79	226 / 250	80 / 80	185 / 247	26 / 27	

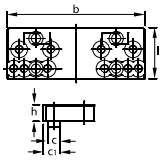
Carrier jaws for use with universal gripp set

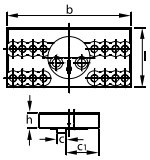
piece

Application: Carrier jaws for the Universal set Gripp No. 361345 size 125 and No.361350 size 125. Mobile pivoted jaws compensate non-parallel clamping faces. Gripp inserts can be screwed into a variety of hole patterns, for secure clamping of various geometries.

36 1208

36 1209





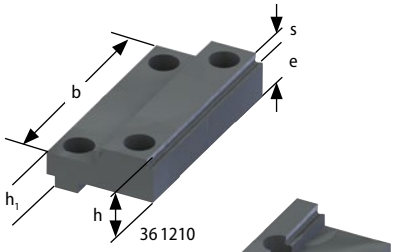
for type		125	bmm	c mm	c_1 mm	h mm	l mm	Clamping range maximum round mm	Clamping range minimum round mm	Clamping range maximum square mm	Clamping range minimum square mm	suitable for colour code
34A 36 1208	Carrier jaw, Uni-Gripp set, for T-Rex **fixed**	XXX	165	14	20	20	61	160	100	152	0	
34A 36 1209	Carrier jaw Uni-Gripp set, for T-Rex / Centro Gripp **pivoting**	XXX	165	12	35.5	20	79	160 / 230	100 / 100	152 / 195	0 / 0	

Stepped jaws

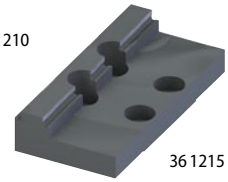
piece

Material: Hardened steel, **coated clamping faces** for high friction values, **increased gripping power by a factor of at least 1.5** (typical hardness 80 HRC).

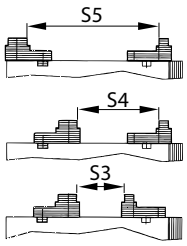
Application: For clamping parallel pre-machined components.



36 1210


36 1215

for type			125
34A 36 1210	Stepped jaw coated, for T-Rex **fixed**		XXX
34A 36 1215	Stepped jaw coated, for T-Rex / Centro Gripp **movable**		XXX
b		mm	124.4
h		mm	26
h_1		mm	14
s		mm	5
e		mm	21
S3 (36 1210)		mm	9 – 67
S3 (36 1215)		mm	9 – 67 / 9 – 162
S4 (36 1210)		mm	48 - 114
S4 (36 1215)		mm	48 – 114 / –
S5 (36 1210)		mm	100 - 183
S5 (36 1215)		mm	100 – 183 / 102 – 256
suitable for colour code (36 1210)			
suitable for colour code (36 1215)			

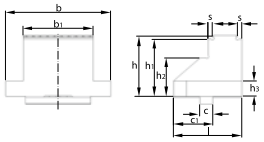


Colour code: T-Rex Centro Gripp

Gripp jaws — piece

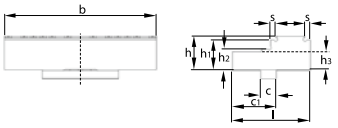
Rigid anti-vibration design for parts clamped upright.
Additional clamping area, ground both sides.

Application: For rectangular workpieces (saw-cut blanks) // ≤ 0.5 mm



36 1218_64

36 1217_64



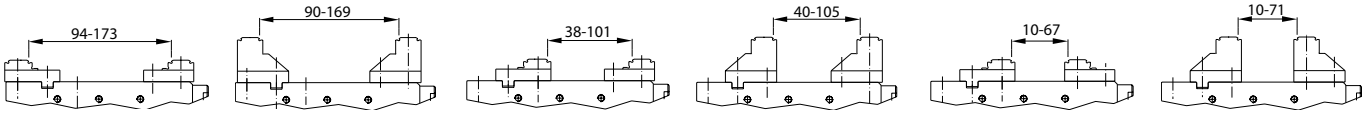
36 1218_125

36 1217_125

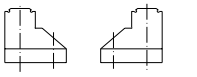
for type	34A 36 1217	34A 36 1218	b	b1	c	c1	h	h1	h2	h3	l	s	suitable for colour code	
	Gripp jaw, for "T-REX"	Gripp jaw, for T-Rex / Centro Gripp											36 1217	36 1218
	fixed	movable	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm		
64	XXX	XXX	96	64	12	22	55	52	35	14	62.5	4		
125	XXX	XXX	118	–	14	34	26	23	16	14	60.6	4		

ALLMATIC Spannsysteme — Parallels / clamping jaws for T-Rex / Centro Gripp

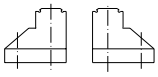
T-Rex clamping capacities in mm with gripp jaws



Centro Gripp clamping capacities in mm with gripp jaws

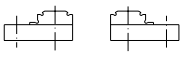


front slot: approx. 78 – approx. 161
rear slot: approx. 146 – approx. 229



front slot: approx. 10 – approx. 93
rear slot: approx. 78 – approx. 161

front slot: approx. 78 – approx. 161
rear slot: approx. 146 – approx. 229



front slot: approx. 10 – approx. 93
rear slot: approx. 78 – approx. 161

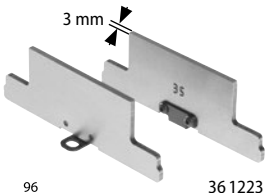
Parallel inserts — pair

Suitable for: For clicking to the high side for No. 361217 size 64 / 1218 size 64 / 1220 / 1222 / 1353 / 1354.

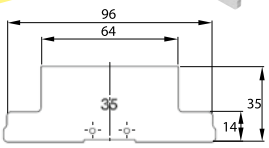
Material: Hardened steel.

Application: For clamping flat components and for drilling close to edges.

Available in different heights on request



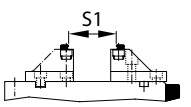
36 1223

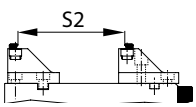


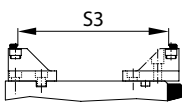
for type	125
34A 36 1223 Pair of parallels Click system	XXX
suitable for colour code	

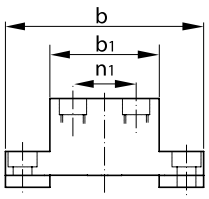
Reduced width jaws 64 mm — piece

Application: For clamping small to medium workpieces.
Blanks can be clamped using 2 adjustable gripp inserts.
Smooth clamping faces for clamping pre-machined workpieces.







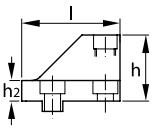


36 1220

for type	34A 36 1220	b	b1	h	h2	l	n1	S1	S2	S3	suitable for colour code
	Jaw 64 mm, for T-Rex										
	fixed	mm	mm	mm	mm	mm	mm	mm	mm	mm	
125	XXX	116	64	45	14	67	37	21 – 68	66 – 138	131 – 209	

36 1222

for type	34A 36 1222	b	b1	h	h2	l	n1	S1	S2	S3	suitable for colour code
	Jaw 64 mm, for T-Rex / for Centro Gripp										
	movable	mm	mm	mm	mm	mm	mm	mm	mm	mm	
125	XXX	96	64	45	14	79	37	21 – 68 / 22 – 144	66 – 138 / –	131 – 209 / 137 – 286	

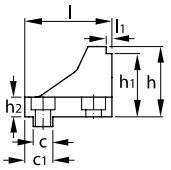


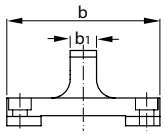
Colour code: T-Rex · Centro Gripp · Titan 2 · LCV125G

Reduced width jaws 20 mm — piece

Application: Clamping faces coated for high friction values, increased gripping power by a factor of at least 2 (typical hardness 80 HRC).

36 1225





for type	34A 36 1225	b	b1	c	c1	h	h1	h2	l	l1	S1	suitable for colour code
	Jaw 20 mm, for T-Rex											
	fixed	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	
125	XXX	116	20	14	20	50	45	14	62	4	9 – 75	

36 1227

for type	34A 36 1227	b	b1	c	c1	h	h1	h2	l	l1	S1	suitable for colour code
	Jaw 20 mm, for T-Rex / for Centro Gripp											
	movable	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	
125	XXX	96	20	12	39	50	45	14	62	4	9 – 75 / 19 – 172	

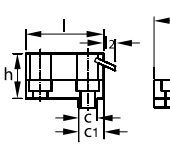
Universal pull-down jaws — piece

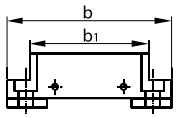
Capacities:
High side **with** spring leaves
0 – 100 mm (T-Rex) / 0 – 138 mm (Centro Gripp).
High side **without** spring leaves
0 – 100 mm (T-Rex) / 0 – 156 mm (Centro Gripp).
Stepped side **without** spring leaves
44 – 126 mm (T-Rex) / 54 – 208 mm (Centro Gripp).

Application: Pull-down with ground spring leaves for rough and machined surfaces.
Click quick-change system for mounting click inserts.
High clamping accuracy for parallel or right angle machining.
Clamping faces leave virtually no visible impression.

Supplied with: Spring leaves.

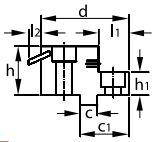
36 1228

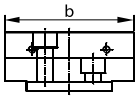




for type	34A 36 1228	b	b1	c	c1	h	l	l2	suitable for colour code
	Universal pull-down jaw, for T-Rex								
	fixed	mm	mm	mm	mm	mm	mm	mm	
125	XXX	124.4	90	14	19	34	59	8.8	

36 1229





for type	34A 36 1229	b	c	c1	h	h1	l	l1	l2	suitable for colour code
	Universal pull-down jaw, for T-Rex / Centro Gripp									
	movable	mm	mm	mm	mm	mm	mm	mm	mm	
125	XXX	90	12	34	34	16	61	21	8.8	

Colour code: T-Rex Centro Gripp

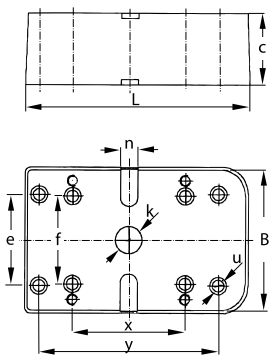
T-Rex extension bases for increasing the NC vice height

Suitable for:

Size 125K – Titan 2 No. 361302 125K.
Size 125 – T-Rex No. 361202 / Centro Gripp No. 361180.
Size 125XL – No. 360405/0465/0510, 361302/1304 125M, 361290.

Supplied with:

Size 125XL – Extension base with 1 locating pin, 2 tenons, 8 duo table clamps, and 4 bolts.
Size 125; 125K – Extension base with 1 locating pin, 2 T-nuts, and 4 bolts.



36 1230_125

36 1230_125XL

for type	34A 36 1230 Extension base	L mm	B mm	c –0.02 mm	e mm	f mm	k H7 mm	n H7 mm	u mm	x mm	y mm	suitable for colour code
125K	(XXX)	280	126	100	100	96	30	20	13	126.2	200	
125	XXX	250	154	85	100	96	30	20	13	125.5	200	
125XL	XXX	400	126	100	–	–	30	20	–	–	–	

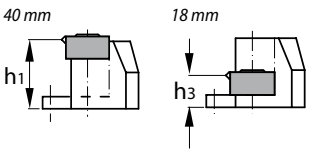
Screw-in gripp inserts / gripp set

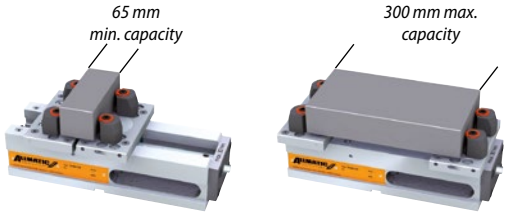
Universal gripp set

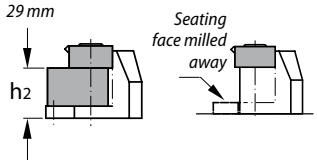
Suitable for: Allmatic jaws 361206 – 361354.

Application: The universal gripp set offers a wide range of possibilities for the clamping of blanks. It consists of a base unit with position adaptation, mounting unit and gripp insert, and is bolted to the carrier jaw with an M10 bolt.
The customer can modify the mounting unit to set the points of the gripp unit in nearly any position relative to the workpiece, allowing the gripp height and also the mounting height of the workpiece to be varied.

36 1345







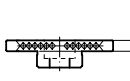
for type	125
34A 36 1345 Universal gripp set (case with 4 units)	XXX

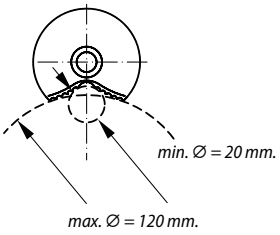
Vee gripp insert

Suitable for: Allmatic jaws 361206 – 361354.

Application: Replaces the gripp in the universal set. The special form of the eye gripp reduces the deformation of the workpiece arising from the transfer of the clamping forces.
This is particularly advantageous for clamping components on which fits are to be machined.

36 1350





36 1350

for type	125
34A 36 1350 Vee gripp insert	XXX

Colour code: Titan 2, T-Rex, Centro Gripp, TC, HiPo, LC, LC-Garant, Titan, LCV125G, NC8

Gripp inserts

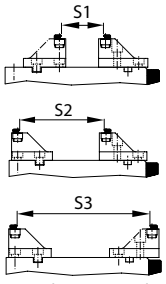
Suitable for: Allmatic jaws No. 361206 – 361354.
GARANT Xpent top jaws No. 361128 and 361129.

Application: Serrated gripp insert, e.g. to clamp blanks.
Smooth clamping insert with coating, e.g. for clamping pre-machined components.
Serrated gripp insert, round, for drilling near to edges and for additional clearance under the workpiece.

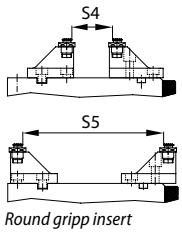
36 1160 – For workpieces with a large radius or chamfer between 3 and 8 mm.

36 1242 – For highly tempered materials and flame-cut blanks.

Optional extras:
36 1238/1240/1239/1241/1242/1245 – Screw-in aid No. 361251_1



Smooth / corrugated gripp insert



Round gripp insert

36 1238 36 1240

36 1241 36 1242

36 1245 36 1250

36 1160_7

Type		1
34A 36 1238	Gripp insert with 2 spikes, height 3.7 – 5.2 mm	XXX
34A 36 1240	Gripp insert with 2 spikes, height 5.2 – 6.7 mm	XXX
34A 36 1239	Gripp insert with 2 spikes, height 8.2 – 9.7 mm	XXX
34A 36 1241	Gripp insert with 4 spikes height 3.7 - 5.2 mm	XXX
34A 36 1242	Gripp insert carbide height 7.1 - 8.6 mm	XXX
34A 36 1245	Clamping insert with coating, height 5.2 – 6.7 mm **smooth**	XXX
34A 36 1250	Gripp insert height 5.5 mm **round**	(XXX)
Dimension S1 – S5	mm	see 361210 / 361222

Type		7
34A 36 1160	Gripp insert	(XXX)
Version		round
Height	mm	8
Dimension S1 – S5	mm	see 361210 / 361222

Screw-in aid for gripp inserts

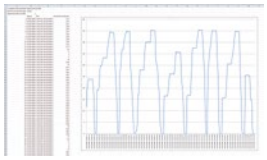
Suitable for: Gripp inserts No. 361238, 361240, 361241, 361242, 361245 and No. 361160 size 1-5.

Application: For easier screwing in of Gripp inserts without using an additional tool.

36 1251

Type		1
34A 36 1251	Screw-in aid for gripp inserts	XXX

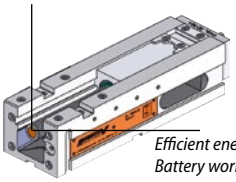
Mobile reception unit „Clamp assist“ for all TITAN2 with measurement function



Handy reception system for reception and evaluation of the clamping force measurements from the TITAN 2 “Clamp assist” No. 361304 transmitted **by radio (2.4 GHz)**. Sturdy unit with magnet for attachment to a structure such as a machine, intuitive operation. Reception system incl. battery rechargeable by USB. Large display field, values clearly legible.
5 working modes: Force display, connection mode, limits, data transmission, battery.

Advantage:
1. Absolutely exact and stepless setting of the required clamping force.
– No risk of clamping forces that are **too high** when clamping difficult workpieces.
– No risk of clamping forces that are **too low** when performing heavy machining.
2. **Secure** clamping. No errors due to improper handling of a torque wrench.
3. Data transmission.
– Live mode: The clamping situation is recorded in 600 data records.
– Statistics mode: Max. values and number of clamping cycles.
– The last 200 clamping cycles are available on record.
4. Constant display of the current clamping forces.

Fully enclosed spindle with electronic transmission unit.


Efficient energy management. Battery working life 4 years.

Setting the desired limit values. Warning at 90% of the limit.

Up to 4 vices can be linked and displayed.

36 1306

Data transmission by cable to PC or laptop.

Type		CA
34A 36 1306	“Clamp assist” clamping force measurement system	XXX
L unit	mm	260
b unit	mm	110
h unit	mm	30
L display	mm	70
b display	mm	35
Operating temperature	degrees	10 – 40
Weight	kg	0.65

Modular NC high pressure vice Titan 2

Slides induction hardened. Side, top and bottom faces ground.

Feature:

Clamps for the modular clamping system.

Increased force travel for secure clamping of blanks in combination with a pull-down function.

Jaws secured with M12 socket head screws.

8 mm lost clearance when pulled down, 3 mm for Gripp.

Clamping can be achieved close to the neutral line.

Jaws are compatible with earlier models.

Outlet for chips and coolant. Precise location slots.

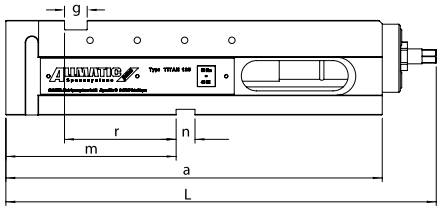
Tapped holes for component backstop and for extension.

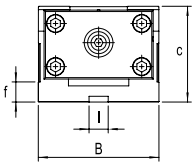
Maximum clamping force 40 kN.

Size 125M – With 25H6 M10 holes at 200 mm pitch for zero-point clamping system.

Function: **Clamping exclusively with adjustable torque wrench (maximum 30 Nm).**
Using special high pressure spindle and mechanical power intensifier.

36 1304 – High-pressure spindle provided with force measurement sensing, fully encapsulated. Transmission of the clamping force measurements by radio (2.4 GHz) to the measurement system No. 361306. Unaffected by vibration, protected against coolant fluids.





Feature:

Size 125K; 125M; 160M – Can be installed vertically.

Advantage: Precise and powerful multi-function high-pressure vice.
- Reliable clamping of blank parts, thanks to the extra long stroke of the high-pressure spindle.
- Precision machined finished parts, base body machined all round.

Application: **For conventional clamping, grip clamping and pull-down clamping.**
Clamping of **flame-cut and saw-cut blanks** by **hardened replaceable gripp elements piercing** into the workpiece. Suitable for all materials up to tensile strength of 1000 N/mm².
Can be used horizontally or laterally.

36 1304 – For measuring and checking the **actual** clamping forces.

Supplied with: 3 hexagon L-wrenches, bi-hex socket 14 AF, 4 stepless adjustable clamps.

Optional extras: For jaws see No. 361331 – 361970.
Torque wrench No. 656050 size 60.

Size 125M – Clamping stud No. 360025.

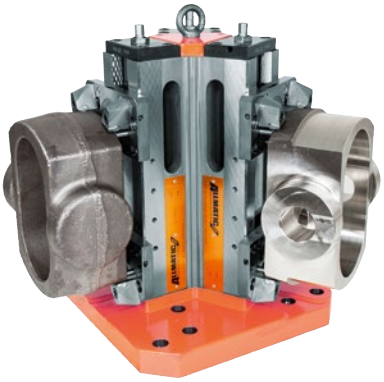
Note:

Size 125L – Extension and facility for bolting a second vice on to the end face available on request.

Size 160M – Clamp capacity extension available using base body No. 360420 size 160.

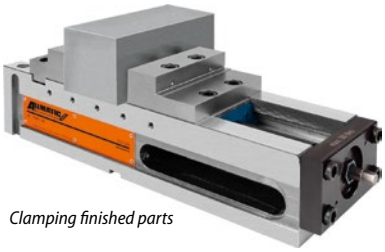
36 1304 – For the "Clamp assist" electronic reception unit see No. 361306.

Size 125K; 125M – Clamp capacity extension available using base body No. 360420 size 125.



Here is an example of clamping a casting using a carrier jaw with pull-down gripp elements.

Blank part clamping using a high jaw – often used for 5-face machining.



Clamping finished parts

Type		125K	125M	125L	160M
34A 36 1302	NC high pressure vice TITAN 2	XXX	XXX	XXX	XXX
34A 36 1304	TITAN 2 NC high-pressure vice with "Clamp assist" clamping force measurement function	(XXX)	(XXX)	(XXX)	(XXX)
Weight	kg	22	30	38	68
L	mm	318	455	587	587
a	mm	280	398	530	530
B	mm	126	126	126	164
c	mm	100	100	100	115
f	mm	21			
g	mm	24	24	24	30
l	mm	20			
m	mm	139	180	–	234
n	mm	20			
p	mm	–	–	176	–
r	mm	77	118	216	164
Colour code for suitable accessories					

Colour code: Titan 2

Modular NC high-pressure vice Titan 2 accessories

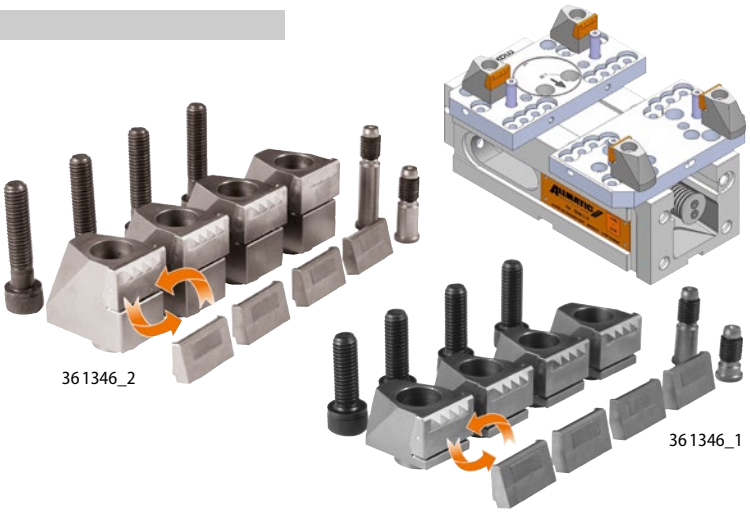
Pull-down set

Suitable for: Carrier jaws No. 361331 / 1336.
Material: Hardened steel.
Supplied with:

Size 1 – 1 storage case with foam,
4 low wedges,
4 screws M10×30 mm,
4 wedge elements 4-pointed,
4 wedge elements Microgripp,
4 clamping pins h = 23 mm,
4 clamping pins h = 34 mm,
1 hexagon L-wrench.

Size 2 – 1 storage case with foam,
4 tall wedges,
4 screws M10×45 mm,
4 wedge elements 4-pointed,
4 wedge elements Microgripp,
4 clamping pins h = 34 mm,
4 clamping pins h = 48 mm,
1 hexagon L-wrench.

Note: Spare parts can be found in our spare parts list under No. 361341, 361343, 361351, 361352.
Only for Titan 2 in width 125 mm - for width 160 mm on request.



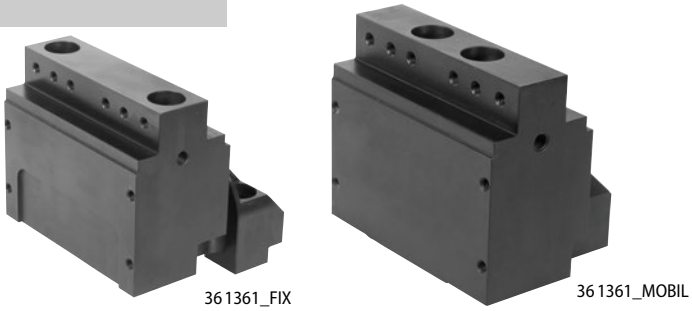
36 1346

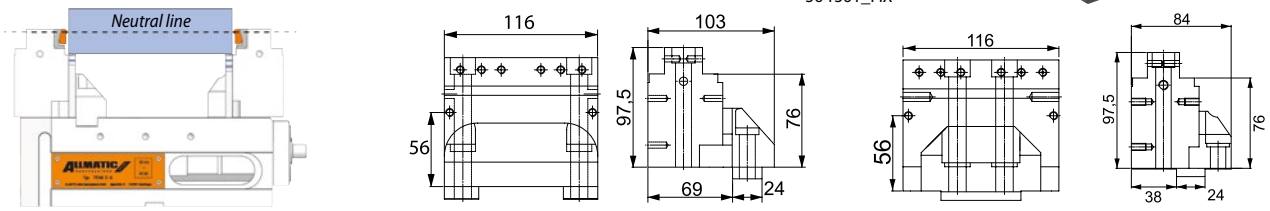
for type		1	2
34A 36 1346	Pull-down set case	XXX	XXX
Version		low	high
suitable for colour code			

5-face jaws

Precision by pulling down. Stability by form fit .
Suitable for: NC high pressure vice No. 361302 / 1304.
Application: Especially suitable for 5-face machining. Better accessibility for tools.

Note: Exclusively for "Titan2".
For use only in conjunction with case set No. 361365!



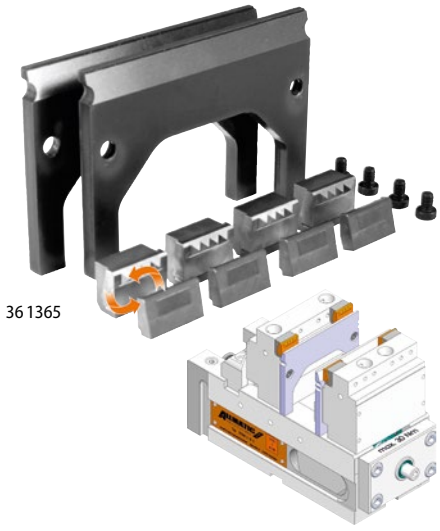


for type		FIX	MOBIL
34A 36 1361	5-face jaws	XXX	XXX
Length	mm	103	84
Width	mm	116	
Height	mm	97.5	
suitable for colour code			

Case set (for 5-face jaw)

Suitable for: 5-face jaw No. 361361.
Supplied with: 1 storage case with foam,
4 wedges,
4×4-pointed wedge elements,
4 Microgripp wedge elements,
2 plug-in plates h = 90 mm,
20 socket-head screws M6×8 mm,
2 socket key drivers.

Note: Spare parts can be found in our spare parts list under No. 36 1362, 36 1363, 36 1364, 36 1366.



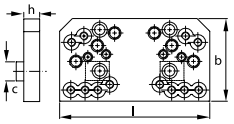
34A 36 1365	Case set for 5-face jaw	XXX
suitable for colour code		

ALLMATIC Modular Gripp jaws system

Carrier jaw fixed — piece

Suitable for: NC high pressure vice No. 361302 / 1304.
Application: The carrier jaw allows mounting of wedges and various different gripp inserts. Wedges, gripp inserts and gripp sets can be screwed into a variety of hole patterns for secure clamping of various workpiece geometries.

Note: Wedge mountings + accessories No. 361341 – 361352, gripp inserts No. 361238 – 361250.



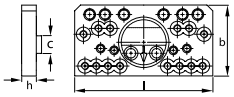
36 1331

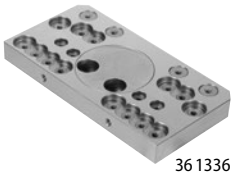
for type		125	160	b mm	c mm	h mm	l mm	suitable for colour code
34A 36 1331	Carrier jaw **fixed**	XXX	–	104	24	20	189	
34A 36 1332		–	XXX	122.5	30	25	250	

Carrier jaw, movable pivoting — piece

Suitable for: NC high pressure vice No. 361302 / 1304.
Application: Movable pivoting carrier jaw for compensation of non-parallel clamping faces, required for clamping unequal workpieces.

Note: Wedge mountings + accessories No. 361341 – 361352, gripp inserts No. 361238 – 361250.





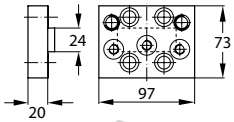
36 1336

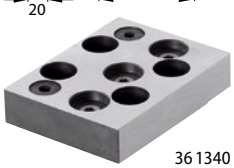
for type		125	160	b mm	c mm	h mm	l mm	suitable for colour code
34A 36 1336	Carrier jaw **movable pivoting**	XXX	–	97	24	20	189	
34A 36 1337		–	XXX	132	30	25	250	

Carrier jaw, movable rigid — piece

Suitable for: No. 361302 / 1304
Application: Movable rigid reduced-width carrier jaw is provided for clamping oversize workpieces across several clamping points or three-point clamping.

Note: Gripp inserts No. 361238 – 361250.





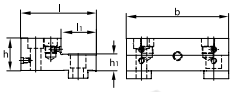
36 1340

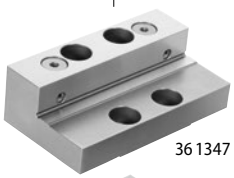
for type		125	suitable for colour code
34A 36 1340	Carrier jaw **movable rigid**	(XXX)	

Stepped jaws for gripp inserts

Suitable for: NC high pressure vice No. 361302 / 1304.
Application: For clamping blanks and finished parts (using screw-in grip inserts).

Note: Blanks can be clamped only if they are parallel workpieces. Gripp inserts No. 361238 – 361250.





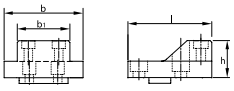
36 1347

36 1348

for type		125	160
34A 36 1347	Stepped jaw for gripp inserts **movable**	XXX	(XXX)
34A 36 1348	Stepped jaw for gripp inserts **fixed**	XXX	(XXX)
b	mm	124.4	160.4
h	mm	39.5	49.8
h_1	mm	20	25
l (36 1347)	mm	70	114
l (36 1348)	mm	92	104
l_1 (36 1347)	mm	40	64
l_1 (36 1348)	mm	43	44
suitable for colour code			

Reduced-width jaws for gripp inserts

Suitable for: NC high pressure vice No. 361302 / 1304.
Application: For clamping blanks and finished parts (using screw-in gripp inserts).



36 1354

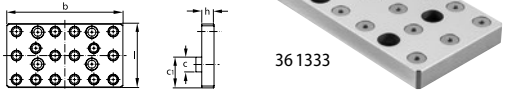
36 1353

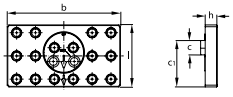
for type		125
34A 36 1353	Reduced-width jaw **movable**	XXX
34A 36 1354	Reduced-width jaw **fixed**	XXX
b (36 1353)	mm	96
b (36 1354)	mm	116
b_1	mm	64
h	mm	45
l (36 1353)	mm	92
l (36 1354)	mm	102
suitable for colour code		

Colour code: LCV125G Titan 2 Titan

Carrier jaws

Suitable for: NC high pressure vices No. 361290 / 361302 / 1304.



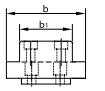


Type		125	b mm	c mm	c_1 mm	h mm	l mm	Clamping range maximum round mm	Clamping range minimum round mm	Clamping range maximum square mm	Clamping range minimum square mm	suitable for colour code
34A **36 1333**	Carrier jaw **fixed**	XXX	189	24	26	20	104	330	50	489	25	
34A **36 1338**	Pivoting carrier jaw **movable**	XXX	189	24	53.5	20	103.5	330	50	489	25	

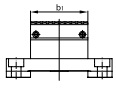
Reduced-width jaws for gripp inserts

Suitable for: NC high-pressure vice No. 361290 and Titan 2.

Type			64	125
34A **36 1357**	Gripp jaw **movable**		XXX	XXX
34A **36 1358**	Gripp jaw **fixed**		XXX	XXX
b		mm	115	125
b_1		mm	64	125
h		mm	55	39.5
h_1 (36 1358)		mm	52	36.5
h_2 (36 1358)		mm	55	39.5
l (36 1357)		mm	82	77.5
l (36 1358)		mm	88	93.5
l_1 (36 1358)		mm	4	
suitable for colour code				



36 1357_64



36 1358_64

Jaws for Gripp inserts

Suitable for: No. 361290 125G, 361302, 361304, jaws No. 361400 125, 361420, 361450 160.
Application: For grip clamping with pull-down function thanks to special tooth geometry on the insert.
Optional extras: Gripp inserts No. 361163 and screws No. 361164.

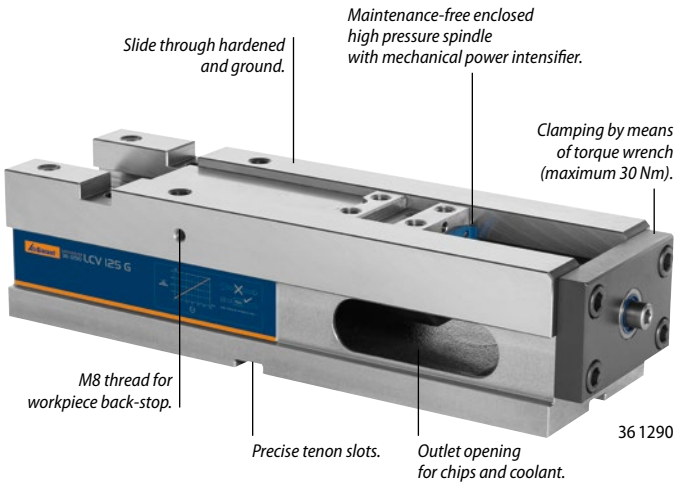
36 1376_125

36 1376_160

Jaw width		mm	125	160
310 **36 1376**	Jaws for Gripp inserts		XXX	XXX
B		mm	39.5	49.8
Number of insert seats		pcs.	9	11
suitable for colour code				

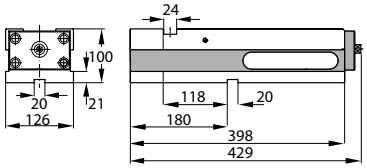
Modular NC high-pressure vice LCV 125 G for conventional and gripp clamping

Top and bottom faces ground. **With 25H6 M10 holes at 200 mm pitch for zero-point clamping system.**
Application: Due to the 2.5 mm power stroke of the spindle, suitable for conventional clamping using stepped jaws and Gripp jaws.
Supplied with: Includes 3 hexagon L-wrenches, steplessly adjustable clamps
Optional extras: For jaws see No. 361331–361970, torque wrench No. 656050 size 60, clamping stud No. 360025



36 1290

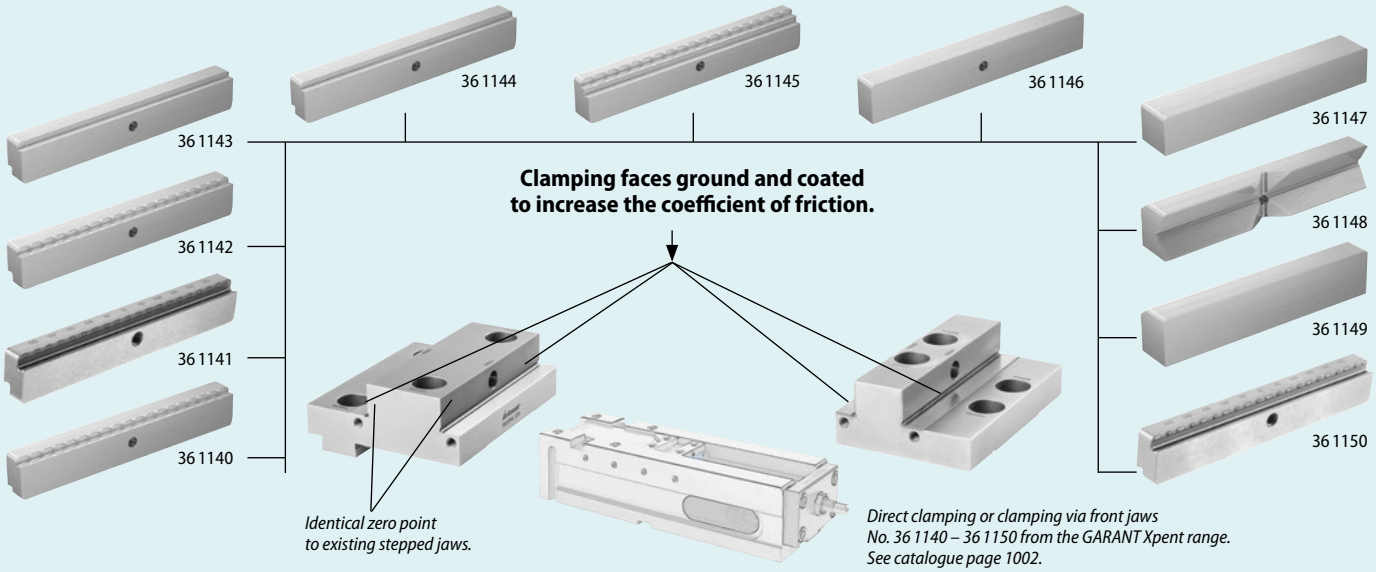
Jaw width A	31H **36 1290** Modular NC high-pressure vice LCV 125 G	Clamping force up to maximum	Torque	maximum clamping range	Weight	Colour code for suitable accessories
mm		kN	N·m	mm	kg	
125G	XXX	40	30	332	30	



Colour code: LCV125G Titan Titan 2

Garant Stepped jaws for GARANT and Allmatic NC vices

When selecting front jaws to be combined, ensure compatibility with the spindle fitted to the NC vice. Smooth front jaws can be combined with a standard high-pressure spindle and with a gripp spindle. Gripp front jaws on the other hand can be combined only with a gripp spindle.



Garant Stepped jaws

Coated, hardened and ground. Fastening screws.

Suitable for: No. 360400 125, 360465 125, 360500 125, 360510 125, 360605 125, 361302 125, 361304 125, 361290 125G together with Allmatic Titan 1 and Allmatic SC125.

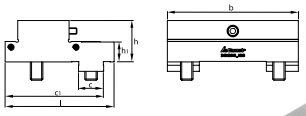
Material: Hardened steel.

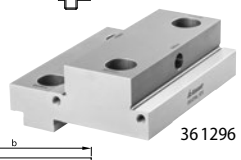
Application: To take front jaws No. 361140-361150.

Note: The front jaws are attached using an M6 bolt.

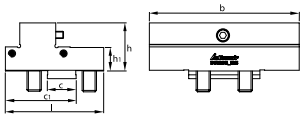
Also available as a set with Allmatic NC8 (No. 36 0405_125MX and _125LX).

36 1295





36 1296



for jaw width		mm	125
310	36 1295	Stepped jaw, mobile	XXX
310	36 1296	Stepped jaw, fixed	XXX
b		mm	125
c		mm	24
c_1 (36 1295)		mm	59
c_1 (36 1296)		mm	94
h		mm	39.5
h_1		mm	19
l (36 1295)		mm	82
l (36 1296)		mm	104
suitable for colour code			

Garant Adapter plates for XPENT top jaws

Hardened and ground. Fastening screws.

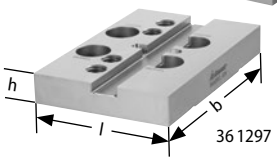
Suitable for: Top jaws No. 361123 to 361134.

Material: Hardened steel

Advantage: Existing NC vices from GARANT or Allmatic can be used with XPENT top jaws and front jaws.

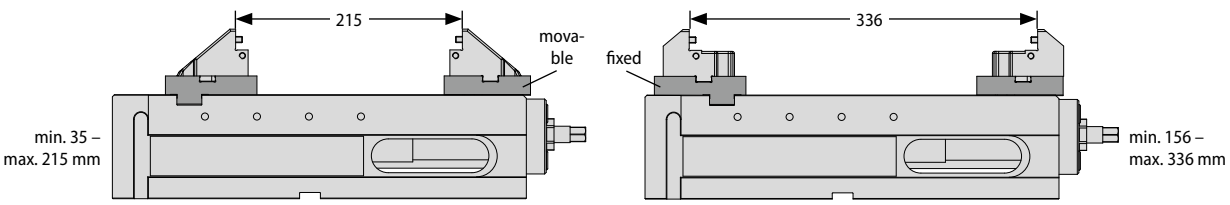
Application: To take the XPENT top jaw.

36 1298



36 1297

for jaw width b		mm	125
310	36 1297	Adapter plate for XPENT top jaw **movable**	XXX
310	36 1298	Adapter plate for XPENT top jaw **fixed**	XXX
h		mm	18
l (36 1297)		mm	83
l (36 1298)		mm	88
suitable for colour code			



Colour code: Duo, Duo Plus, HiPo, LC, LC-Garant, LCV125G, NC8, TC, Titan 2, Titanium

Note on stepped jaws 361295 and 361296

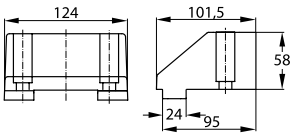
Standard high-pressure spindle	Gripp spindle
■ Using conventional clamping with this spindle the transverse forces cannot be greater than 15 % of the rated clamping force (coefficient of friction μ = 0.15 for steel on steel). ■ The stroke of the power intensifier is 1.0 mm, i.e. only a limited grip can be achieved via the serrations on the front jaw and therefore this is not recommended.	■ Gripp technology achieves positive engagement, so that in practice close to 40 kN clamping force is achieved even transversely to the direction of clamping. ■ The stroke of the power intensifier is up to 3.8 mm. This ensures positive engagement between the hard gripp jaw and workpiece.
Allmatic TC, GARANT HiPo, Allmatic LC, GARANT LC, Allmatic NC8	Allmatic Titan2, Allmatic Titan2 Clamp Assist, GARANT LCV125, Allmatic Duo Plus, Allmatic SC125, Allmatic Titan 1

Clamping jaws for NC high pressure vice

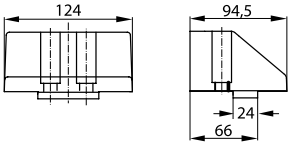
Jaw blanks — piece

Material: GGG 40.
Application: For in-house manufacturing of form jaws.
Supplied with: Attachment screws, 1 clamping jaw.

for type		125
34A 36 1320	Clamping jaw, soft **fixed**	XXX
34A 36 1325	Clamping jaw, soft **movable**	XXX
for type		125
suitable for colour code		



36 1320

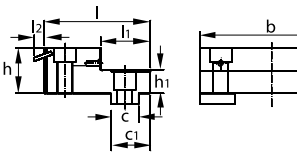


36 1325

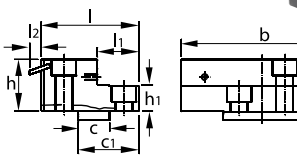
Universal pull-down jaws / stepped jaws — piece

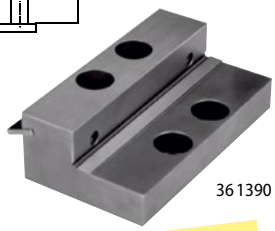
Application: Pull-down with ground spring leaves for rough and machined surfaces. Click quick-change system for mounting click inserts. High clamping accuracy for parallel or precision angle machining.
Supplied with: Spring leaves.

for type			125
34A 36 1380	Universal pull-down jaw **fixed**		XXX
34A 36 1390	Universal pull-down jaw **movable**		XXX
b		mm	124.4
c		mm	24
c_1 (36 1380)		mm	34
c_1 (36 1390)		mm	46.5
h		mm	39.5
h_1		mm	20
l (36 1380)		mm	92
l (36 1390)		mm	75
l_1 (36 1380)		mm	43
l_1 (36 1390)		mm	32
l_2		mm	8.8
suitable for colour code			



36 1380

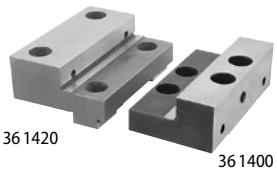



36 1390

Sizes 90, 125, and 160 with **Click quick-change system,** for No. 361440 only in sizes 90 and 125.
Application: Accepts parallel inserts on high side or stepped side (No. 361950 / 1960 / 1970).

for type			90	125	160	200
34A 36 1400	Stepped jaw **movable**		XXX	XXX	–	–
34A 36 1450			–	–	XXX	(XXX)
34A 36 1420	Stepped jaw **fixed**		XXX	XXX	XXX	(XXX)
34A 36 1440			XXX	XXX	–	–
b		mm	89.5	124.4	160	200.4
h		mm	34	39.5	50	60
h_1		mm	16	20	25	25
l (36 1400, 36 1450)		mm	56	70	81.2	85.2
l (36 1420)		mm	67	92	104	104
l (36 1440)		mm	64	87	–	–
l_1 (36 1400, 36 1450)		mm	31	40	64	65
l_1 (36 1420)		mm	32	43	54	54
l_1 (36 1440)		mm	25	42	–	–
suitable for colour code (36 1400, 36 1450)						
suitable for colour code (36 1420)						
suitable for colour code (36 1440)					–	–

When using No. 36 1450, components < 17 mm can also be clamped.


36 1420

36 1400

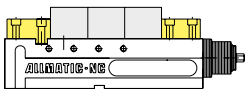
Colour code: TC, HiPo, LC, LC-Garant, Titan, Titan 2, LCV125G, NC8, Duo, Duo Plus

Hard base jaws – one side with serrations, Click system — piece

Suitable for: NC8, Garant-NC, Titan.
Material: Hardened steel, ground surfaces.
Application:
- For fitting all high pressure jaws No. 362390 to 362600.
- For fitting stepped jaws No. 361950 / 1960 / 1970.

Supplied with: Fastening screws.

for type		90	125	160
34A 36 1500	Base jaw **movable**	(XXX)	XXX	(XXX)
34A 36 1520	Base jaw **fixed**	XXX	XXX	(XXX)
b	mm	89.5	124.4	160.4
h	mm	34	39.5	49.8
l (36 1500)	mm	60	76	100
l (36 1520)	mm	63	88	104
for type		90	125	160
suitable for colour code (36 1500)				
suitable for colour code (36 1520)				

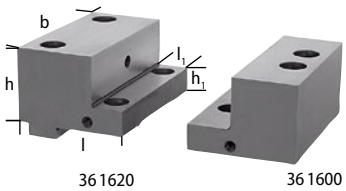


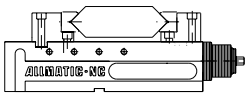
Adapter jaws – high side hardened — piece

Suitable for: NC8, Garant-NC, Titan.
Material: Hardened steel, ground surfaces.
Application:
- For fitting existing or self-manufactured jaws.
- For fitting all high pressure jaws No. 362390 to 362600.

Supplied with: Fastening screws.

for type		90	125	160	200
34A 36 1600	Adaptor jaw **movable**	(XXX)	XXX	XXX	(XXX)
34A 36 1620	Adaptor jaw **fixed**	(XXX)	XXX	XXX	(XXX)
b	mm	90	126	164	202
h	mm	46	58	73	85
h_1	mm	16	20	24	24
l (36 1600)	mm	60	80	100	100
l (36 1620)	mm	66	85	100	100
l_1 (36 1600)	mm	30	32	34	38
l_1 (36 1620)	mm	30	32	34	34
suitable for colour code (36 1600)					
suitable for colour code (36 1620)					



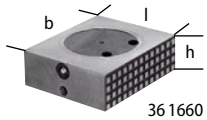


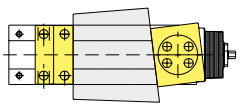
Pivot jaws – One side with serrations — piece

Suitable for: NC8, Garant-NC, Titan.
Material: Hardened steel, ground surfaces.
Application:
- For clamping non-parallel workpieces.
- For fitting stepped jaws No. 361950 / 1960 / 1970.

Supplied with: Fastening screws.

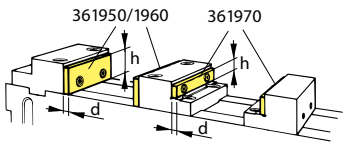
for type		90	125	160
34A 36 1660	Pivot jaw **movable**	XXX	XXX	XXX
for type		90	125	160
b	mm	90	124.4	160.4
h	mm	34	39.5	49.8
l	mm	68	84	118
suitable for colour code				





Parallel inserts — pair

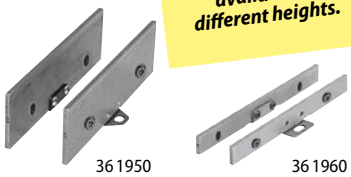
Suitable for:
36 1970 – For screw-fixing to the stepped face of No. 361400 / 1420 / 1440.
36 1950/1960 – For screw-fixing or clicking to the high side of No. 361400 / 1420 / 1440 / 1450 / 1500 / 1520 / 1660.
Material: Hardened steel.
Application: For clamping flat components and for drilling close to edges.



Reversible stepped jaws (included in price for No. 36 0400 / 0500 / 0600 / 0900).

for type		90	125	160
34A 36 1950	Pair of parallel inserts Click system, hardened steel	XXX	XXX	XXX
34A 36 1960		(XXX)	XXX	(XXX)
34A 36 1970	Pair of parallel inserts (stepped face)	XXX	XXX	(XXX)
l	mm		3	
h (36 1950)	mm	29	35	44
h (36 1960)	mm	16	20	25
h (36 1970)	mm	13	15	19
suitable for colour code				

On request, the parallel inserts are available in different heights.



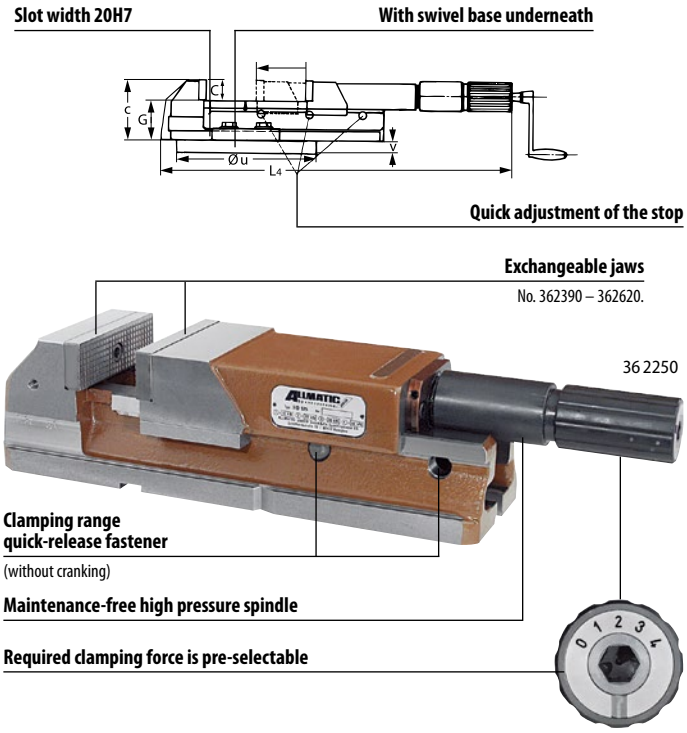
Colour code: TC, LC, Duo, NC8, HiPo, LC-Garant, Titan, Titan 2, LCV125G, Duo Plus, Basic

High pressure machine vices

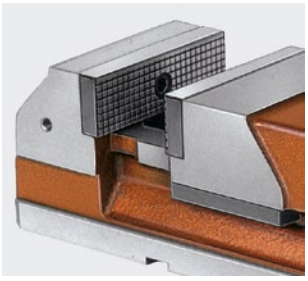
- Base body with **longitudinal and transverse tenon slots** enables **fast and exact alignment** of the vice in longitudinal and transverse directions.
- Maintenance-free high pressure spindle with constant pressure level due to low-wear fully mechanical power intensifier.
- High quality spheroidal cast iron, hardened, ground workpiece mounting face and ground guides.
- Required clamping force pre-selectable: No high pressure at 0 setting. Continuous tests have shown that the power intensifier can withstand 1 million working strokes without harm.
- **No fall-off in clamping force. Fast alignment** with 2 loose tenons in the precisely manufactured slot in the **vice base.**
- Interchangeable jaws, hardened and ground(with serrated faces).
- Height tolerance – 0.03 mm.

Application:
- For **vibration-free, absolutely reliable clamping at maximum cutting and feed rate forces.**
- Consistent support height allows efficient working with several vices alongside each other.
- **Clamping using crank.** High clamping forces can be achieved with low physical effort due to maximum 2 spindle rotations.

Supplied with: 4 table clamps, 1 pair serrated jaws, crank handle.

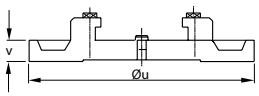


Jaw width	34A 36 2250	Clamping range b I	Clamping range b II	Clamping force	Weight	c	C	G –0.05	L_4	Colour code for suitable accessories
	High-pressure vice without swivel base									
mm		mm	mm	kN	kg	mm	mm	mm	mm	
100	XXX	0 – 82	78 – 162	30	18	87	32	53.5	419 – 581	
125	XXX	0 – 102	98 – 202	40	30	120	40	78	507 – 709	
160	XXX	0 – 152	147 – 302	60	60	137	50	85	613 – 915	


36 2250

Swivel base for high-pressure machine vices

- Swivel base with longitudinal tenon slot for **quick and exact alignment** of the vice.
- 360 graduations (4×90°) clearly marked on the scale of the swivel base.
- 4 clamping slots for easy attachment to the machine table.



for jaw width	34A 36 2260	Ø u	v	Weight
	Swivel base			
mm		mm	mm	kg
100	XXX	260	26	6
125	XXX	320	30	12

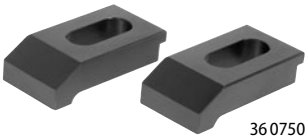
36 2260

Accessories for machine vices

Suitable for: **GARANT**-NC No. 360510 / 0465 / 2010 / 1290.
Allmatic No. 360405 / 0600 / 0605 / 1180 / 1255 / 1202 / 1301 / 1302 / 1304 / 2250 and old version NC with No. 360000.

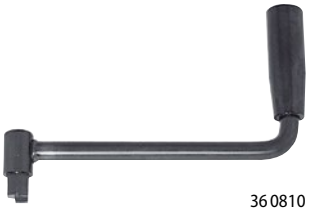
Spare clamps

for jaw width	mm	100	125/160
34A 36 0750	Clamp set **2 pieces**	XXX	XXX
suitable for colour code			


36 0750

Spare crank

for jaw width	mm	100	125/160
34A 36 0810	Crank	XXX	XXX
suitable for colour code			


36 0810

Colour code: HD-Allmatic, HD-Holex, HiPo, LC, LC-Garant, LCV125G, Duo, TC, NC8, TeleCentric, Titan, Titan 2, T-Rex

HOLEX High pressure machine vices

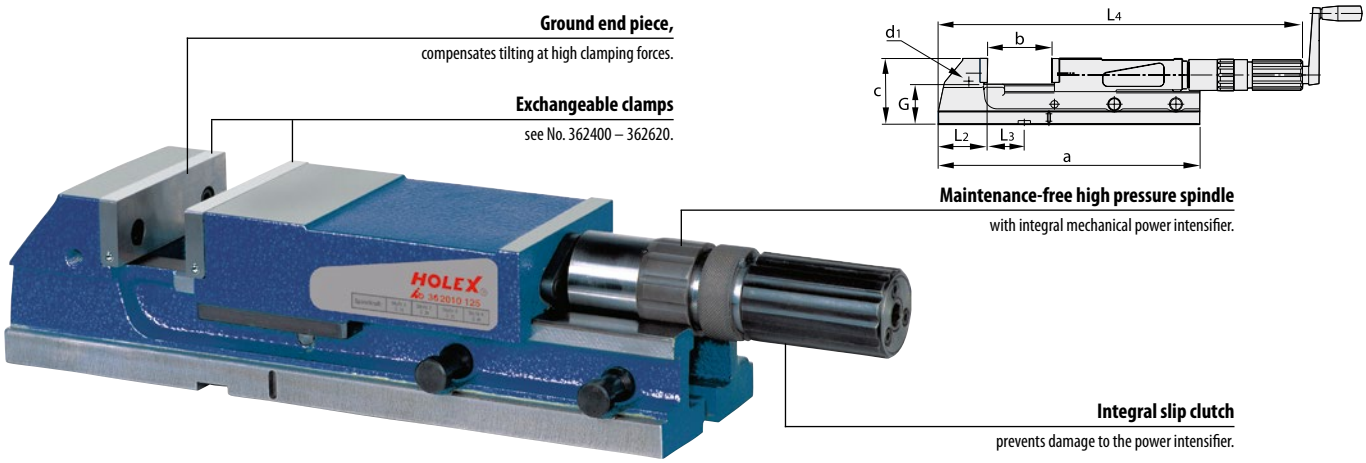
- Base body and movable upper sliding blocks made of spheroidal graphite iron GGG 60, slides hardened and ground.
- Mechanical power intensifier with precise clamping force pre-selection.
- Maintenance-free and fully enclosed high-pressure spindle.
- As standard with hardened and ground smooth clamping jaws.
- Base plate with **longitudinal and cross slots** provides for **quick and precise alignment** of the vice in longitudinal and transverse directions.

Application:
- For absolutely reliable vibration-free clamping under extreme cutting and feed rate forces.
- Tight manufacturing tolerances enable a number of vices to be fitted in line with each other.

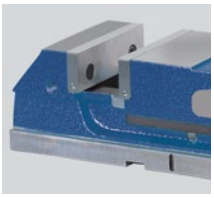
Supplied with: 4 table clamps, 1 pair hardened jaws, crank handle.

Optional extras:
- **For tenon and Tee-nut set see No. 360530;** for accessories see No 362015 – 362025.
- For further jaws see No. 362400 – 362620.

Note:	In order to mount jaws from the accessories, the standard jaws must first be removed.



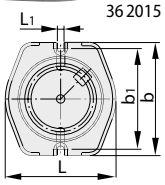
Jaw width	32F 36 2010 HOLEX High-pressure vice	Clamping range b I	Clamping range b II	Clamping range b extended	Clamping force	Weight	c	d_1	a	L_2	L_3	L_4	G +0.02	Colour code for suitable accessories
mm		mm	mm	mm	kN	kg	mm		mm	mm	mm	mm	mm	
125	XXX	0 – 105	100 – 205	255	40	25	107	M12	425	80	60	489 – 694	65	
160	XXX	0 – 155	150 – 305	365	50	50	130	M16	570	90	95	575 – 880	80	



Swivel bases

- Swivel base with longitudinal tenon slots for fast and exact alignment of the vice.
- 360 graduations (4×90°) clearly marked on the swivel plate scale. Clamping slots for easy fitting to the machine table.

36 2015



for jaw width	32F 36 2015 Swivel base	L	L_1	Height	Shoulder length b	b_1	Weight	suitable for colour code
mm		mm	mm	mm	mm	mm	kg	
125	XXX	264	16	28	270	240	10.8	
160	XXX	325	16	32	325	295	18.4	

Accessories

for jaw width mm		125	160
32F 36 2020	Adjustable component backstop	XXX	XXX
suitable for colour code			

for jaw width mm		125	160
32F 36 2030	Clamping jaw with stepped upper edge	XXX	XXX
suitable for colour code			

for jaw width mm		125	160
32F 36 2035	Clamping jaw with longitudinal grooves	XXX	XXX
suitable for colour code			

HOLEX Swivel bases

Suitable for: High-pressure vice No. 362075.

Feature: Bearing edge ground, 360° graduations for angular adjustment, 20H7 fixing slot.

36 2073

for jaw width mm		113	135	160
32E 36 2073	Swivel base for vice	XXX	XXX	XXX
External ∅	mm	242	280	340
Clamping slot	mm	14	14	18
suitable for colour code				

Colour code: High pressure Holex; High press. vices

HOLEX High pressure machine vices

- Base body as well as fixed and movable clamping pieces of high-quality spheroidal graphite cast iron (GGG60). All wearing parts such as the jaw guides hardened and ground.
- Mechanical-hydraulic clamping system with power intensifier with clamping force pre-setting.
- Constant clamping force for each clamping operation, high repeat accuracy.
- Base plate with longitudinal slot and transverse slot allowing quick alignment of the vice.
- Enclosed spindle.

Supplied with: 1 pair grooved jaws (rear face smooth), hand crank.

Optional extras: For replacement jaws see No. 362076 / 2077 / 2079, swivel base on request.

Jaw width	32E 36 2075 High-pressure vice without swivel base	Clamping range b I	Clamping range b II	Clamping range b III	Clamping force	Weight	c	H	C	L_4	G ±0.02	Colour code for suitable accessories
mm		mm	mm	mm	kN	kg	mm	mm	mm	mm	mm	
113	XXX	0 – 56	52 – 113	109 – 170	30	24	97	55	31.6	413 – 583	65.5	
135	XXX	0 – 72	69 – 147	144 – 220	40	39	112	70	39.6	461 – 679	72,5	
160	XXX	0 – 104	102 – 207	205 – 310	50	60	133	80	49.6	507 – 817	83,5	

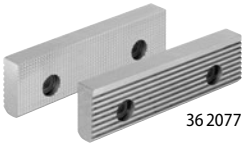
Clamping jaws

Suitable for: High pressure machine vice No. 362075.

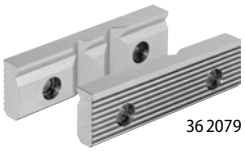
for jaw width mm		113	135	160
32E 36 2076	Jaw with longitudinal grooves, other face smooth	XXX	XXX	XXX
suitable for colour code				

36 2076

for jaw width mm		113	135	160
32E 36 2077	Jaw with fine serrations, other face with longitudinal grooves	(XXX)	(XXX)	(XXX)
suitable for colour code				


36 2077

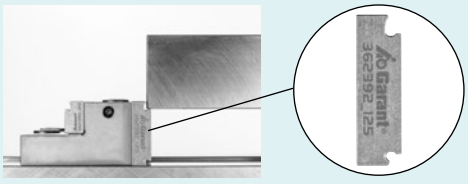
for jaw width mm		113	135	160
32E 36 2079	Jaw with Vees, other face with longitudinal grooves	XXX	XXX	XXX
suitable for colour code				


36 2079

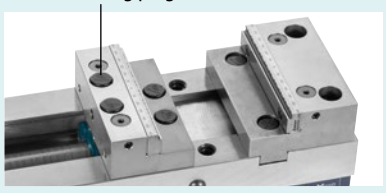
Garant Use of Gripp front jaws for standard stepped jaws

36 2392

Two clamping steps of 3 mm and 5 mm



Blanking plug 36 1171


36 2390

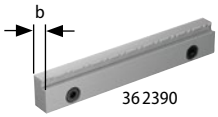
Garant Gripp front jaws

High precision when clamping. The additional jaws greatly extend the application range of your vice. Optimised tooth profile for high retention forces.

36 2392 – Reversible jaw with 2 clamping steps. One clamping step of 3 mm height and one clamping step of 5 mm height.

for jaw width mm		125	160
31S 36 2390	Front jaw	XXX	XXX
31S 36 2392	Front jaw	XXX	XXX
b mm		12	
h (36 2390) mm		20	25
h (36 2392) mm		40	50
suitable for colour code			

new



36 2390

36 2392

Colour code: High press. vices, HD Allmatic, HD Holex, Basic, HiPo, LC, LC-Garant, NC8, TC, Titan 2, LCV125G

Accessories for machine vices

Suitable for: **GARANT**-NC No. 360510 / 0465 / 1290.
HOLEX No. 362010.
ALLMATIC No. 362250 – 362300 and also with base jaw No. 361500 – 361520 suitable for version NC8. Adaptor jaws No. 361600, 361620 also suitable for all NC versions.

Application: The additional jaws extend the application range greatly. Hydraulic compensation jaws for multiple clamping of round material or for clamping components with surface deviations on request.

Note: Please order attachment screws separately - No. 362621 M10×23.

for jaw width	mm	100	125	160
34A 36 2400	Pair of clamping jaws with serrated faces	XXX	XXX	XXX
suitable for colour code				

36 2400

for jaw width	mm	100	125	160
34A 36 2420	Pair of clamping jaws, smooth	XXX	XXX	XXX
suitable for colour code				

36 2420

for jaw width	mm	125	160
34A 36 2460	Pair of pull-down roller jaws	XXX	XXX
suitable for colour code			

36 2460

for jaw width	mm	100	125	160
34A 36 2500	Pair of Vee jaws	XXX	XXX	XXX
suitable for colour code				

36 2500

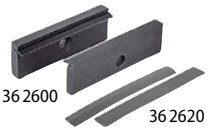
for jaw width	mm	125	160
34A 36 2520	Pair of base jaws soft	(XXX)	XXX
suitable for colour code			

36 2520

for jaw width	mm	100	125	160
34A 36 2560	Pair of clamping jaws with stepped upper edge	XXX	XXX	XXX
suitable for colour code				

36 2560

for jaw width	mm	125	160
34A 36 2600	Pair of spring leaf jaws	(XXX)	XXX
34A 36 2620	Pair of spare spring leaves	(XXX)	XXX
suitable for colour code			


36 2600 36 2620

Jaws with position pins (pneumatically operated)

- Hardened steel, Tenifer gas nitrided (tolerance ± 0.01 mm).
- Simple to fit on the vice.
- Pins pushed in mechanically.
- Compressed air operation via valves on both sides.
- The fixed and movable jaws are identical.
- Requires a 5.5 bar compressed air supply

Suitable for: **GARANT**-NC No. 360510 / 0465 / 1290.
HOLEX No. 362010.
Allmatic No. 360405 / 0600 / 0605 / 1180 / 1202 / 1302 / 1304 / 2250 / 2350 and with clamping jaws No. 361400 – 1620.

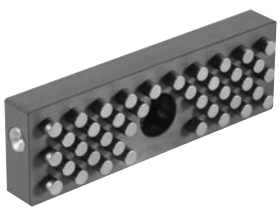
Application: Quick changeover for different machining operations.
- Quick and fully repeatable positioning accuracy.
- Eliminates tedious fitting of jaw inserts.

Supplied with: 1 fastening screw.

Actuation from both sides with a compressed air gun replaces the previous procedure of using the push-out pin with its obstructive contour.

Positioning pins pushed in manually.

Individual contours can be clamped.



for jaw width	mm	125	160
31S 36 2627	Jaw with positioning pins	XXX	XXX
suitable for colour code			

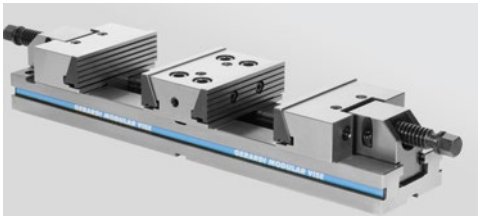
Colour code: HD-Allmatic, TC, HiPo, LC, LC-Garant, HD-Holex, Basic, LCV125G, NC8, Titan 2

Modular vices

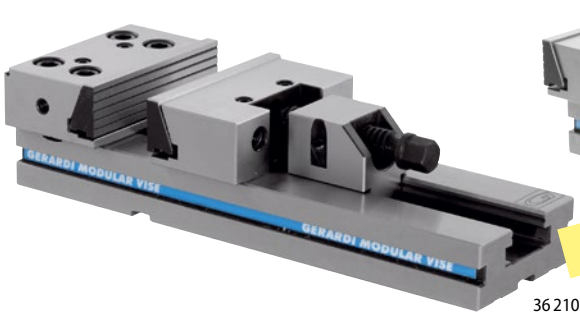
- Simple mechanical actuation (up to 3.5 t).
- Easy adjustment of jaw opening.
- Machine vice with pull-down jaws.
- Case-hardened HRC 60.
- Parallelism 0.02 mm.

Supplied with: Supplied with pull-down jaws, 1 workpiece backstop, 2 T-nuts No. 362160 size 16/16, 1 clamping wrench, 1 cross-bar wrench.

Note: For other T-nuts see No. 362160.

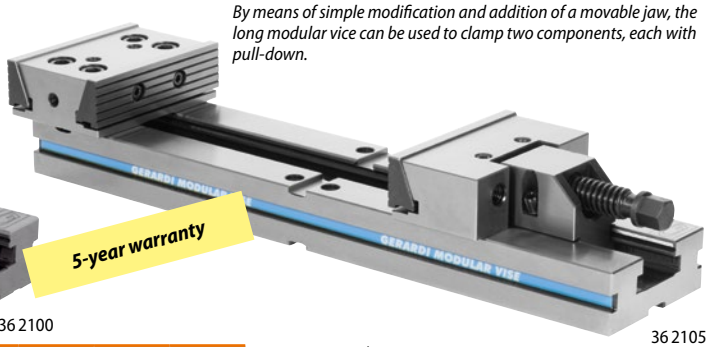


By means of simple modification and addition of a movable jaw, the long modular vice can be used to clamp two components, each with pull-down.



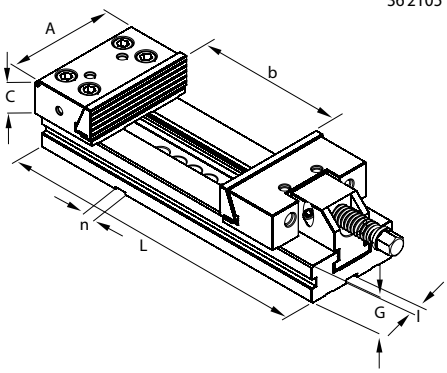
36 2100

5-year warranty



36 2105

Jaw width A		mm	125	150/2	150/3	200/3	200/4
35G 36 2100	Modular vice		XXX	XXX	XXX	XXX	XXX
35G 36 2105	Modular vice long		XXX	XXX	XXX	–	–
Weight (36 2100)		kg	17	35.5	40	69	74
Weight (36 2105)		kg	18.3	32	35	–	–
L (36 2100)		mm	345	420	520	595	695
L (36 2105)		mm	520	580	680	–	–
b (36 2100)		mm	150	200	300	300	400
b (36 2105)		mm	320	360	460	–	–
Base body height G		mm	40	50	50	70	70
C		mm	40	50	50	65	65
Longitudinal tenon slot l		mm			16		
Transverse tenon slot n		mm			16		
maximum clamping force at 60 Nm		kN	25	–	–	–	–
maximum clamping force at 80 Nm		kN	–	30	30	–	–
maximum clamping force at 120 Nm		kN	–	–	–	40	40
Colour code for suitable accessories							



Jaws

for jaw width		mm	125	150	200
35G 36 2120	Pair of clamps		XXX	XXX	XXX
35G 36 2125	Prismatic jaw (piece)		XXX	XXX	–
35G 36 2130	Square top jaw (piece)		XXX	XXX	–
35G 36 2135	Prismatic top jaw (piece)		XXX	XXX	–
35G 36 2140	Angled top jaw (piece)		(XXX)	(XXX)	–
35G 36 2142	Centre jaw (piece)		XXX	XXX	–
35G 36 2143	Movable jaw (piece)		XXX	XXX	–
35G 36 2144	Complete clamping element (piece)		XXX	XXX	–
suitable for colour code					

36 2120

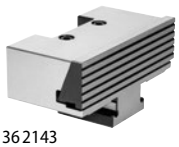
36 2125

36 2130

36 2135

36 2140

36 2142



36 2143

36 2144

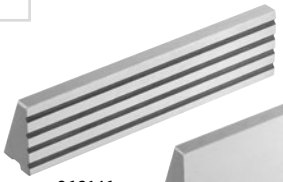
Front jaws

Supplied with:

36 2149 – For size 125 1 magnetic parallel and 3 grip inserts of No. 362151 U.
For size 150 / 200 1 magnetic parallel and 5 grip inserts of No. 362151 U.

Note: **Front jaws not suitable for the fixed jaw of the vice 362105!**

for jaw width		mm	125	150	200
35G 36 2146	Longitudinally serrated front jaw (piece)		XXX	XXX	(XXX)
35G 36 2147	Smooth front jaw, hard (piece)		(XXX)	XXX	(XXX)
35G 36 2148	Smooth front jaw, soft (piece)		(XXX)	XXX	(XXX)
35G 36 2149	Front jaw with grip inserts		(XXX)	XXX	(XXX)
suitable for colour code (36 2146, 36 2147, 36 2148)					



36 2146

36 2147 / 2148

36 2149

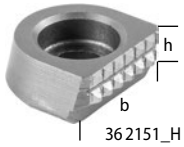
Colour code: Gerardi 125 | Gerardi 150 | Gerardi 200 | Modular Holex 125 | Modular Holex 150

Gripp inserts

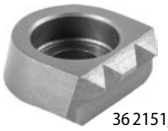
Suitable for: Front jaw with grip inserts No. 362149.

Application: U – For standard material.
H – For very hard materials.
S – For soft materials.

362151_U



362151_H


362151_S

Type			U	H	S
35G 36 2151	Gripp inserts		XXX	XXX	XXX
h		mm		7	
b		mm		14.5	

Modular elements

- Machine vice with pull-down jaws.
- Simple mechanical actuation (up to 3.5 t).
- Easy adjustment of jaw opening.
- Case-hardened HRC 60.

Supplied with: 2 pieces T-nuts No. 362160 size 16/16.

Note: For other T-nuts see No. 362160.

362145

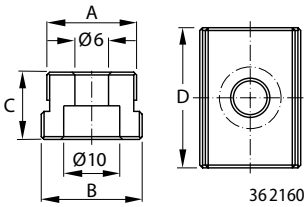
362150

for jaw width		mm	125	150
35G 36 2145	Modular element movable (piece)		XXX	XXX
35G 36 2150	Modular element fixed (piece)		XXX	XXX
suitable for colour code				

T-nuts

Accuracy: Dimension B = fit h6.

T-slot dimension B / keyway		mm	12/16	14/16	16/16	18/16	20/16
35G 36 2160	Pair of T-nuts		XXX	XXX	XXX	XXX	XXX
A		mm			16		
B		mm	12	14	16	18	20
C		mm	10	10	10	10	12
D		mm			25		
suitable for colour code							



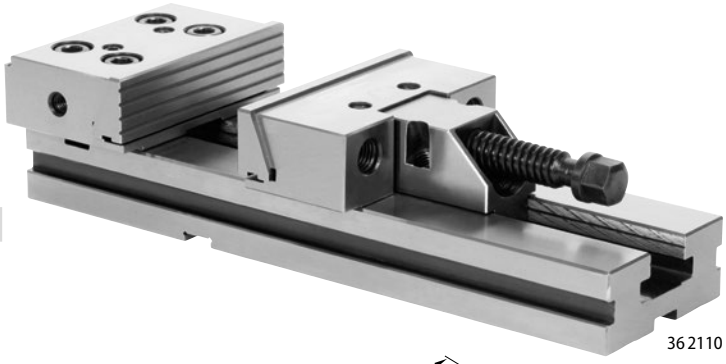
362160

HOLEX® Modular vices

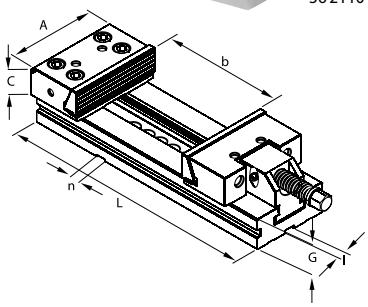
- Machine vice with pull-down jaws.
- Simple mechanical actuation (up to 3.5 t).
- Easy adjustment of jaw opening.
- Case-hardened HRC 60.
- Parallelism 0.02 mm.

Supplied with: Component backstop, 2 T-nuts similar to No. 362160 size 18/16, 1 clamping wrench, 1 L-wrench for hexagon socket screws, 4 clamping claws.

Note: See No. 362160 for other T-nuts.


362110

Jaw width A		mm	125	150/2	150/3
32P 36 2110	Modular vice		XXX	XXX	XXX
Weight		kg	18.5	34	37.5
L		mm	345	420	520
b		mm	150	200	300
Base body height G		mm	40	50	50
C		mm	40	50	50
Longitudinal tenon slot l		mm		16	
Transverse tenon slot n		mm		16	
Colour code for suitable accessories					



Jaws

for jaw width		mm	125	150
32P 36 2127	Prismatic jaw (piece)		XXX	XXX
32P 36 2132	Square top jaw (piece)		XXX	XXX
suitable for colour code				

362127

362132

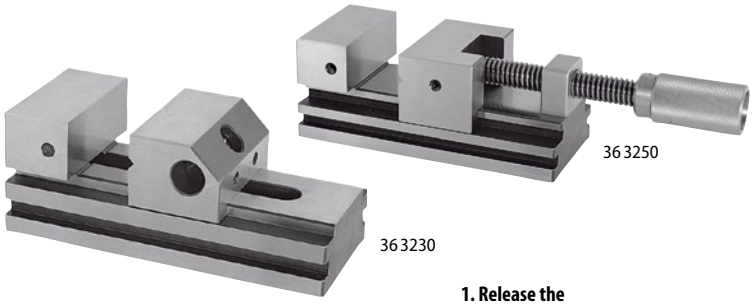
Colour code: Gerardi 125 | Gerardi 150 | Gerardi 200 | Modular Holex 125 | Modular Holex 150

Precision grinding and inspection vices

Ground Vee grooves.
All-steel, through hardened and **precision ground all round** for 4-face machining.

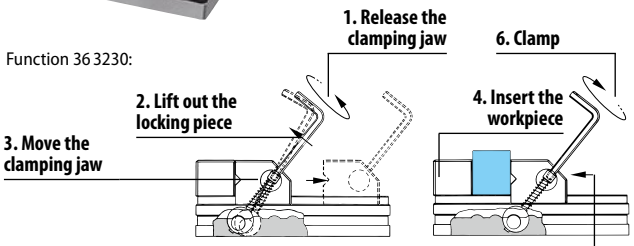
36 3230 – **With quick adjustment (no spindle).**
36 3250 – **With threaded spindle.** With horizontal Vee groove.

Accuracy: Within **0.005 mm** / 100 mm.
Application: For **machining and inspection true to gauge.**
Supplied with: Sturdy **case.**



Jaw width A		mm	70
38F 36 3230	Grinding and inspection vice **with quick adjustment**		XXX
38F 36 3250	Grinding and inspection vice **with threaded spindle**		XXX
maximum clamping range b		mm	80
Jaw height C		mm	30
Overall length a		mm	160
Overall width B		mm	70
Base body height G		mm	62
Weight		kg	3

Function 36 3230:

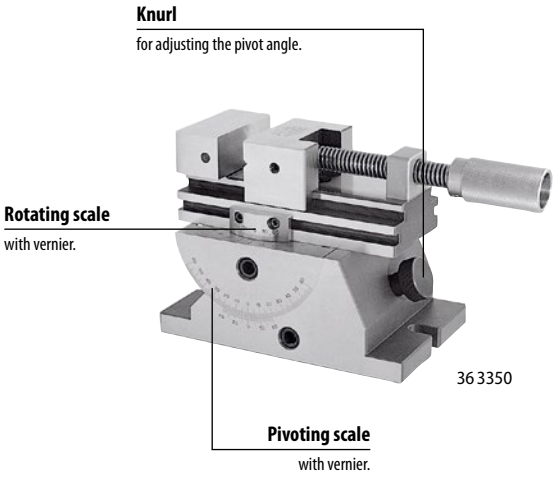


slide the jaw up to the workpiece – the lock engages automatically.

SPREITZER Universal grinding and inspection vice

- Tool steel, through hardened, precision ground.
- Adjustment in **2 axes,** rotating and pivoting.
- Scale reading via vernier: 3'.

Accuracy: Within **0.003 mm** / 100 mm.
Application: For **machining** and **inspection of surfaces and angular surfaces up to 46°, true to gauge.**



Jaw width A		mm	70
38F 36 3350	Universal grinding and inspection vice		XXX
maximum clamping range b		mm	80
Jaw height C		mm	30
Overall length a		mm	180
Overall width B		mm	110
Overall height c		mm	137
Pivot range			2×60°
Weight		kg	12

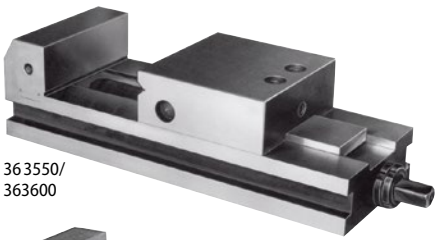
SPREITZER Precision grinding and inspection vices

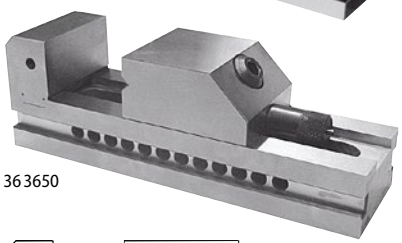
- Hardened steel; **precision ground all round.**

Working on 4 different faces (front, rear, and side faces).

36 3550 – With horizontal **ground Vee profile.**
36 3600 – Magnetisable chromium steel – **stainless** (for working with coolants and lubricants which aggressively cause rusting).
36 3650 – Movable jaw can be slid to the component by hand and clamped. **On release, the movable jaw automatically backs away from the component.**

Accuracy: Within **0.003 mm** / 100 mm (system accuracy).
Function: **Pull-down system** – The movable jaw is pulled down by the resulting clamping force; no lifting of the component or vibration during machining.
Application: For **machining and inspection true to gauge.**
36 3600 – **Also suitable for spark eroding.**
Supplied with:
36 3550/3600 – Operating crank handle.





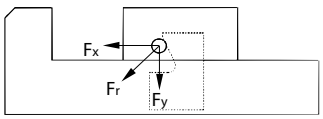


Illustration: Pull-down system

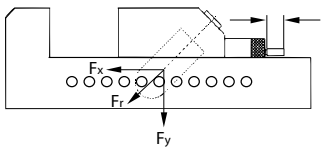


Illustration: Pull-down system – stroke indication.

Jaw width A		mm	45	65	100	125
38F 36 3550	Grinding and inspection vice **with spindle**		XXX	XXX	XXX	XXX
38F 36 3600	Grinding and inspection vice **with spindle, stainless**		–	–	XXX	–
38F 36 3650	Grinding and inspection vice **without spindle**		XXX	XXX	XXX	XXX
maximum clamping range b (36 3550, 36 3600)		mm	65	100	140	160
maximum clamping range b (36 3650)		mm	85	130	160	180
Jaw height C		mm	20	37	40	43
Overall length a (36 3550, 36 3600)		mm	150	220	270	300
Overall length a (36 3650)		mm	160	230	270	310
Overall width B		mm	45	65	100	125
Weight		kg	1.3	4.3	9.5	14.5

Quick-release vices

- Quick adjustment of the movable jaws.
- **Jaws through hardened and ground.**
- **Time-consuming cranking not necessary.**
- **Precise clamping due to long flat guide.**
- **Clamping of component with just one hand.**
- One jaw with horizontal and vertical prismatic profiles for round material, one jaw smooth.
- Both jaws are stepped at the top to clamp flat parts.
- With two side support faces.
- Positive locking.

Accuracy: Within **0.03 mm.**
Material: Body and movable jaw made of sturdy special cast iron.
Application: **For quick clamping of components on drilling machines and measuring machines.**

36 5023

Jaw width A	mm	110	135
32P **36 5023**	HOLEX Quick-release vice for one-hand use	XXX	XXX
Clamping range b	mm	130	160
Jaw height C	mm	32	40
Base body length a	mm	280	365
Base body width B	mm	112	138
Overall height c	mm	82	80.5
maximum overall length L_4	mm	510	587
Weight	kg	9.5	13.5
Colour code for suitable accessories			

Slide

Suitable for: Quick-release vice No. 365023.
Application:
- Prevents twisting whilst drilling.
- Aligned and secured using table T-slots.

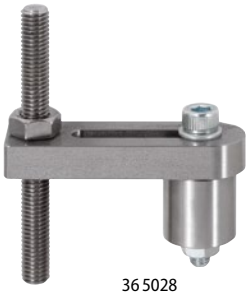
Supplied with: 2 each T-nut sizes 12 and 14, 2 bolts, 1 tenon.

36 5025

31S **36 5025**	Slide for No. 365023	XXX

Backstop

Suitable for: No. 365023 and 365035.

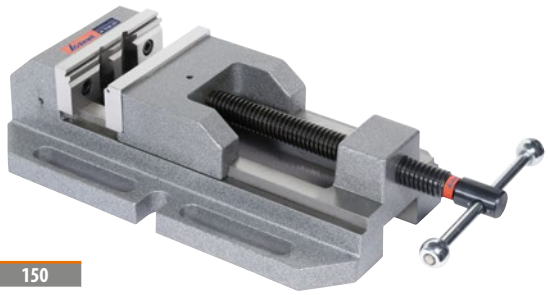

36 5028

Type		1	2
38F **36 5028**	Backstop	XXX	XXX
suitable for 365020 / 365023		110	135
suitable for 365035		60 / 100	120 / 150
suitable for colour code			

Garant Drilling machine manual vice

- **Sturdy design with strong spindle.**
- **Jaws through hardened and ground.**
- **Precise clamping due to long flat guide.**
- One jaw with horizontal and vertical prismatic profiles for round material, one jaw smooth.
- Both jaws are stepped at the top to clamp flat parts.

Accuracy: Within **0.10 mm.**
Material: Body and movable jaw made of special cast iron.
Application: For clamping components on drilling machines.


36 5035

Jaw width A	mm	60	100	120	150
31S **36 5035**	Drilling machine manual vice	XXX	XXX	XXX	XXX
Clamping range b	mm	70	130	160	200
Jaw height C	mm	25	32	40	40
Base body length a	mm	169	286	340	400
Base body width B	mm	115	174	193	226
Overall height c	mm	55	82	90	90
Clamping slot spacing	mm	90	141	160	189
Clamping slot width	mm	17	17	17	19
maximum overall length L_4	mm	271	474	556	652
Weight	kg	3.2	11.7	18	23.8
Colour code for suitable accessories					

Colour code: BM vice blue BM vice, grey

HOLEX Hand-Drilling-Machine-Vice

- **Sturdy and handy design.**
- **Jaws through hardened and ground.**
- **Consistent overall length** (the spindle retracts into the handle)
- Universal fastening capability due to long holes.
- Movable jaw with guides at the sides.
- Fixed jaw with three vertical prismatic and one horizontal prismatic section.

Accuracy: Within **0.20 mm.**
Material: **Cast iron body.**
Application: For clamping components on drilling machines.

Jaw width A		mm	80	100	120
32D 36 5045	Drilling machine manual vice		XXX	XXX	XXX
Clamping range b		mm	65	87	110
Jaw height C		mm		30	
Base body length a		mm	233	288	343
Overall height c		mm	64	64	66
Weight		kg	4	4.8	6.5

HOLEX 3-way drilling machine manual vice

- **Can be used horizontally, vertically or laterally.**
- **Sturdy and handy design.**
- **Jaws through hardened and ground.**
- **Uniform total length.** (spindle retracts into handle!)
- Universal fastening capability due to long holes.
- Movable jaw with guides at the sides.
- Fixed jaw with three vertical prismatic and one horizontal prismatic section.
- With detachable crank.

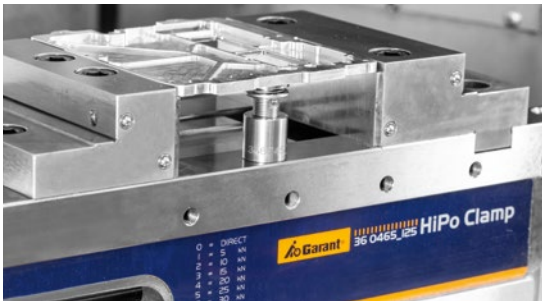
Accuracy: Within **0.20 mm**.
Material: **Cast iron body.**
Application: For clamping components on drilling machines.

Jaw width A		mm	80	100	120
32D 36 5055	Drilling machine - manual vice		XXX	XXX	XXX
Clamping range b		mm	77	101	128
Jaw height C		mm	30	30	39
Base body length a		mm	158	191	225
Overall height c		mm	64	64	67
Weight		kg	4	4.8	6.5

Garant Magnetic support frame

- For use as an additional support point to avoid vibration of the workpiece.
- Ideal in combination with vices.
- Simple and accurate positioning for vertical and horizontal clamping.
- With knurled surface for manual adjustment of height and width across flats, for more positive support.
- Captive support elements.
- Point support available in any position.

Suitable for: All vices, can be used as a support in all clamping situations.
Material: Spring steel
Application: For avoiding vibration, especially when clamping thin workpieces.



Type			15
310 36 6745	Magnetic support frame		XXX
H		mm	27 – 40
Diameter		mm	20

Garant Sets of magnetic parallels

Accuracy: Height tolerance ± 0.01 mm; width tolerance ± 0.02 mm.
Hardness: 60 HRC.

Advantage:
- Flexible use thanks to integral rod magnet on the underside.
- Reduction in set-up time.

36 6320

36 6320

36 6321

Length		mm	90	125	160
31Z 36 6320	Set of parallels, underside magnetic		XXX	XXX	XXX
31Z 36 6321			XXX	XXX	XXX
Number of strips		pair	5		
Width (36 6320)		mm	5		
Width (36 6321)		mm	10		
Height		mm	15; 23; 28; 30; 32	20; 30; 35; 37; 39	25; 37; 42; 45; 47

Sets of parallels – 5 pairs — magnetic

Reduces the clamping time by up to 10 %.

Note: Available also in lengths 50, 70, 100 and 150 mm.

36 6740

36 6740

Length		mm	90	125	160	200
31Z 36 6740	Set of parallels **magnetic**		XXX	XXX	XXX	XXX
Number of strips		pair	5			
Width		mm	2.5			
Height		mm	15; 22; 25; 30; 32	15; 30; 35; 37; 39	22; 30; 37; 42; 47	25; 40; 47; 52; 57
Length		mm	90	125	160	200

Sets of parallels

Parallel blocks in various thicknesses – upright

Precision ground as pairs.

36 6702 – GARANT – **precision version.** Pairing tolerance ≤ 0.004 mm, width / height tolerance ≤ 0.007 mm, extremely precise flatness and rectangularity. Documents stored in special plastic stand. Hardness: 60 HRC.

36 6704 – HOLEX – standard version. Height and pairing tolerance 0.01 mm. Presented in a wooden box. Hardness: 60 HRC.

Application: In high precision work for parallel mounting of components in machine vices or jigs.

Note: Sizes 125 – 200: In 1 mm increments, except 9 mm, all other dimensions achievable. See the spare parts list for spare holders.

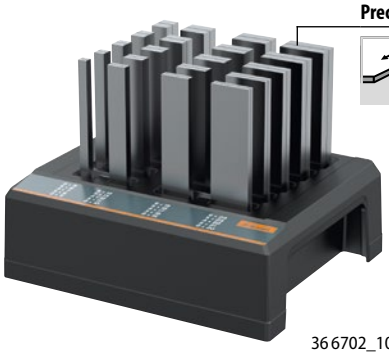
36 6702_125/150/200

Precision version

with large display

for quick location of documents.

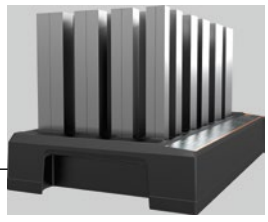
36 6704



36 6702_100

Robust non-tipping box

with grip recesses.



36 6702

Length		mm	100	125	150	200
31Z 36 6702	Garant	Set of parallels	XXX	XXX	XXX	XXX
32D 36 6704	HOLEX		XXX	XXX	XXX	–
Number of strips		pair	20	24	24	24
Length		mm	100	125	150	200
Content:			2×5; 2×10; 2×15; 2×20; 3×6; 3×11; 3×16; 3×21; 4×7; 4×12; 4×17; 4×22; 5×8; 5×13; 5×18; 5×23; 6×9; 6×14; 6×19; 6×24	8×11; 8×16; 8×21; 8×26; 8×31; 8×36; 10×13; 10×18; 10×23; 10×28; 10×33; 10×38; 12×15; 12×20; 12×25; 12×30; 12×35; 12×40; 14×17; 14×22; 14×27; 14×32; 14×37; 14×42	8×11; 8×16; 8×21; 8×26; 8×31; 8×36; 10×13; 10×18; 10×23; 10×28; 10×33; 10×38; 12×15; 12×20; 12×25; 12×30; 12×35; 12×40; 14×17; 14×22; 14×27; 14×32; 14×37; 14×42	8×11; 8×16; 8×21; 8×26; 8×31; 8×36; 10×13; 10×18; 10×23; 10×28; 10×33; 10×38; 12×15; 12×20; 12×25; 12×30; 12×35; 12×40; 14×17; 14×22; 14×27; 14×32; 14×37; 14×42

HOLEX Sets of parallels

Accuracy: Plan parallelism height tolerance ± 0.01 mm; **hardness:** 57 HRC.
Insert the clamping clips into the clamp blocks and click them on to the vice.

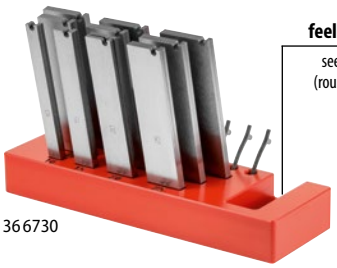
Suitable for: All GARANT, Allmatic NC high pressure vices with tenon width (dimension A) 39 mm ± 0.1 mm.

Advantage: The clamp blocks remain in position during machining and after the high pressure vice has been opened.

Supplied with: Supplied with plastic stand, 10 pairs of inserts, 4 clamping clips

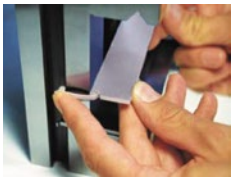
Optional extras: Spare clamping levers No. 366731 in the spare parts list.

Note: Check dimension A on the high pressure vice!

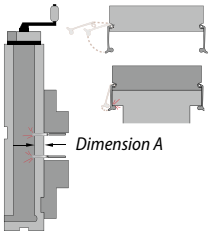


Storage for feeler gauge stock
see illustration below (round or rectangular).

366730



further sizes on request



Type		125
38F 36 6730	Set of parallels **with clamping clip**	XXX
Number of strips	pair	10
Width	mm	3
Height	mm	10; 15; 20; 25; 28; 30; 33; 35; 36; 37
Length	mm	125
suitable for colour code		

HOLEX Sets of parallels, flat

Ground in pairs, hardness 60 HRC.
Accuracy: height tolerance ± 0.01 mm; width tolerance ± 0.02 mm.

Application: In high precision work for parallel mounting of components in machine vices or jigs.

Set of parallels – 14 pairs, flat / 150×10 mm

32D 36 6750	Set of parallels	XXX
Number of strips	pair	14
Width	mm	10
Height	mm	14; 16; 18; 20; 22; 24; 26; 28; 30; 32; 35; 40; 45; 50
Length	mm	150

366750

Set of parallels – 9 pairs, flat / 160×4 mm

32D 36 6751	Set of parallels	XXX
Number of strips	pair	9
Width	mm	4
Height	mm	10; 14; 18; 22; 26; 30; 34; 38; 42
Length	mm	160

366751

Set of parallels – 8 pairs, flat / 160×8 mm

32D 36 6752	Set of parallels	XXX
Number of strips	pair	8
Width	mm	8
Height	mm	12; 17; 22; 25; 28; 32; 36; 38
Length	mm	160

366753

Set of parallels – 8 pairs, flat / 200×8 mm

32D 36 6753	Set of parallels	XXX
Number of strips	pair	8
Width	mm	8
Height	mm	17; 22; 26; 28; 32; 36; 38; 42
Length	mm	200

366752

Individual pairs of parallels

Hardness: 60 HRC. **Precision ground as pairs.**

36 6706–6726 – GARANT – precision version. Accuracy: Height and pairing tolerance **± 0.007 mm.**

36 6741–6746 – GARANT – height tolerance 0.01 mm.

36 6755–6770 – HOLEX – height tolerance 0.01 mm.

Suitable for:

36 6755 – Set of parallels 366750.

36 6760 – Set of parallels 366751.

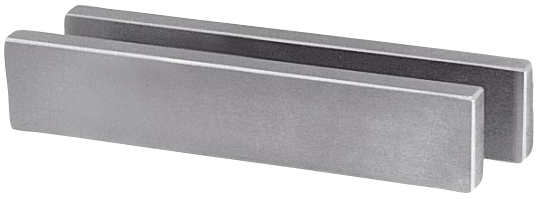
36 6765 – Set of parallels 366752.

36 6770 – Set of parallels 366753.

36 6706–6726 – Set of parallels 366702; 366704.

36 6741–6746 – Set of parallels 366740.

Application: In high precision work for parallel mounting of components in machine vices or jigs.



36 6706

36 6741

Width×height	31Z 36 6706
	GARANT
	Single pair of parallels for
mm	366702 / 6704 size 100
2×5	XXX
2×10	XXX
2×15	XXX
2×20	XXX
3×6	XXX
3×11	XXX
3×16	XXX
3×21	XXX
4×7	XXX
4×12	XXX
4×17	XXX
4×22	XXX
5×8	XXX
5×13	XXX
5×18	XXX
5×23	XXX
6×9	XXX
6×14	XXX
6×19	XXX
6×24	XXX

Width×height	31Z 36 6711	31Z 36 6716	31Z 36 6726
	GARANT		
	Single pair of parallels for		
mm	366702 / 6704 size 125	366702 / 6704 size 150	366702 size 200
8×11	XXX	XXX	XXX
8×16	XXX	XXX	XXX
8×21	XXX	XXX	XXX
8×26	XXX	XXX	XXX
8×31	XXX	XXX	XXX
8×36	XXX	XXX	XXX
10×13	XXX	XXX	XXX
10×18	XXX	XXX	XXX
10×23	XXX	XXX	XXX
10×28	XXX	XXX	XXX
10×33	XXX	XXX	XXX
10×38	XXX	XXX	XXX
12×15	XXX	XXX	XXX
12×20	XXX	XXX	XXX
12×25	XXX	XXX	XXX
12×30	XXX	XXX	XXX
12×35	XXX	XXX	XXX
12×40	XXX	XXX	XXX
14×17	XXX	XXX	XXX
14×22	XXX	XXX	XXX
14×27	XXX	XXX	XXX
14×32	XXX	XXX	XXX
14×37	XXX	XXX	XXX
14×42	XXX	XXX	XXX

Height	31Z 36 6741	31Z 36 6742	31Z 36 6744	31Z 36 6746
	GARANT			
	Single pair of magnetic parallels for			
mm	366740 size 90×2.5	366740 size 125×2.5	366740 size 160×2.5	366740 size 200×2.5
15	XXX	XXX	–	–
22	XXX	–	XXX	–
25	XXX	–	–	XXX
30	XXX	XXX	XXX	–
32	XXX	–	–	–
35	–	XXX	–	–
37	–	XXX	XXX	–
39	–	XXX	–	–
40	–	–	–	XXX
42	–	–	XXX	–
47	–	–	XXX	XXX
52	–	–	–	XXX
57	–	–	–	XXX

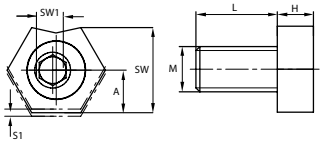
Width	32D 36 6755	32D 36 6760	32D 36 6765	32D 36 6770
	HOLEX			
	Single pair of parallels for			
mm	366750 size 150×10	366751 size 160×4	366752 size 160×8	366753 size 200×8
10	–	XXX	–	–
12	–	–	XXX	–
14	XXX	XXX	–	–
16	XXX	–	–	–
17	–	–	XXX	XXX
18	XXX	XXX	–	–
20	XXX	–	–	–
22	XXX	XXX	XXX	XXX
24	XXX	–	–	–
25	–	–	XXX	–
26	XXX	XXX	–	XXX
28	XXX	–	XXX	XXX
30	XXX	XXX	–	–
32	XXX	–	XXX	XXX
34	–	XXX	–	–
35	XXX	–	–	–
36	–	–	XXX	XXX
38	–	XXX	XXX	XXX
40	XXX	–	–	–
42	–	XXX	–	XXX
45	XXX	–	–	–
50	XXX	–	–	–

Garant Multi-eccentric clamp

- Hexagon steel washer with eccentric steel screw.
- Clamping of workpieces of any shape.
- **6 different geometries at the clamping faces:** 1. Vee with 150° opening angle 2. Longitudinally grooved 3. Smooth step 4. Serrated 5. Smooth 6. Smooth coated.
- Requires less space, so few interference contours.

Application: Suitable for clamping blanks and finished parts

exclusive world first



Thread M	310 37 0001 Eccentric clamp	Hexagon washer AF	Internal hexagon AF_1	Eccentric travel S_1	Dimension A	Washer height H	L	Clamping force	maximum tightening torque
		mm	mm	mm	mm	mm	mm	kN	N·m
M10	XXX	25	7	1.6	12.7	10	9	9	28

MITEE-BITE PRODUCTS INC. Clamping systems for jig inserts

Eccentric clamp

- Requires only small space, so few interference contours.
- Clamping of workpieces of any shape.

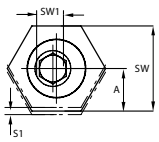
37 0005 – Hexagon brass washer with eccentric steel screw.
37 0008 – Clamping washer of case-hardened steel with eccentric steel screw.

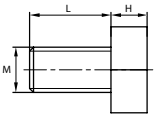
Supplied with: 1 pc. steel screw, 1 pc. clamping washer.

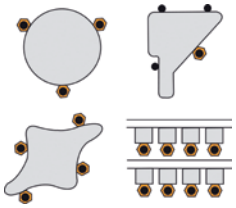
Note: A hexagon L-wrench size 7 is required for clamp M 10!

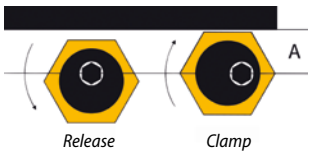
37 0008_M12

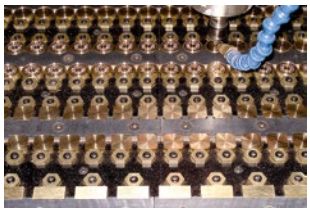
37 0005_M12









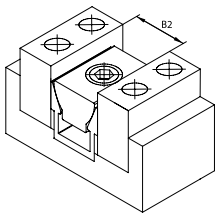


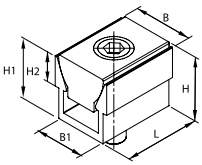
Thread M	37M 37 0005 Eccentric fixture clamp	37M 37 0008 Eccentric fixture clamp with knife edge		Hexagon washer AF 37 0005	Claw plate ∅ D_1 37 0008	Internal hexagon AF_1	Eccentric travel S_1	Dimension A	Washer height H 37 0005	Washer height H 37 0008	L	Clamping force	maximum tightening torque
				mm	mm	mm	mm	mm	mm	mm	mm	kN	N·m
M6	XXX	–	10	16	–	4	1.3	7.8	4.8	–	12	3.4	8.5
M8	XXX	–	12	20	–	5	1	10.2	4.8	–	16	3.6	11.3
M10	XXX	XXX	10	20	20.6	7	1.6	10.2	6.4	9.6	20	9	28
M12	XXX	XXX	8	25	25.4	8	2	12.7	9.5	9.6	25	18	88
M16	XXX	XXX	4	30	30.1	12	2.5	15	12.7	12.7	27	27	88

Double wedge clamp

- Aluminium profile with steel wedge including screws.
- Space-saving multiple clamping.

Application: Particularly suitable for clamping round and flat parts.





37 0010_M6

Thread M	37M 37 0010 Double wedge clamp		L	Width B	H	B_1	H_1	B_2	H_2	Maximum spreading tension	suitable for hex socket -AF	maximum tightening torque	Clamping force
			mm	mm	mm	mm	mm	mm	mm	mm	mm	N·m	kN
M4	XXX	8	15.9	12.3	14.5	10.4	12.7	12.7	5.6	13.2	3	3.4	2.2
M6	XXX	6	23.8	18.6	19	16.1	19.05	19	9.5	20.3	5	14.3	6.7
M8	XXX	4	31.7	24.8	25.9	20.8	25.4	25.4	12.7	26.9	6	14.5	8.9
M12	XXX	2	47.6	37.3	38.6	30.8	38.1	38.1	19	39.9	10	38.4	15.6

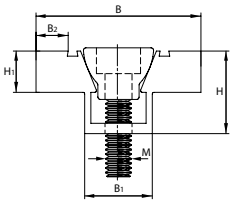
Positive engagement double wedge clamp

37 0011 –
- Aluminium profile with steel wedge including screws.
- Extra-wide jaws, to allow the workpiece contour to be milled in.

Advantage:

37 0011 –
- Positive engagement of workpieces, thus secure clamping.
- Clamping of 2 workpieces at the same time.

Note: The locking plate is required for machining the double wedge clamp.



37 0011

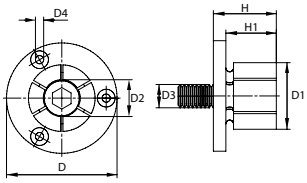
37 0012

Thread M	37M 37 0011 Positive engagement double wedge clamp	37M 37 0012 Locking plate	L 37 0011 mm	Width B 37 0011 mm	H 37 0011 mm	B_1 37 0011 mm	H_1 37 0011 mm	B_2 37 0011 mm	maximum tightening torque 37 0011 N·m	Clamping force 37 0011 kN
M4	XXX	XXX	28.6	15.7	12.7	10.67	6.3	4.6	3.4	2.23
M6	XXX	XXX	38.1	23.9	19.1	16.05	9.4	6.6	14.3	6.68
M8	XXX	XXX	50.8	31.8	25.4	20.83	12.7	9.9	14.5	8.9
M12	XXX	XXX	76.2	47.5	38.1	30.86	19.1	15.7	38.4	15.58
M16	XXX	XXX	101.6	63.5	50.8	41.28	25.4	20.3	74.6	26.7

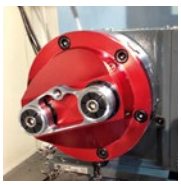
Clamping mandrel for through hole

- Base body of structural steel including steel screw.
- 5-face machining possible.
- Very high repetition accuracy.
- Easy machining of the base body **at the desired clamping ∅.**

Application: For clamping workpieces in an existing bore.



D_1 mm	37M 37 0015 Clamping mandrel for through hole	∅ D mm	D_2 smallest clamping ∅ mm	∅ D_3	∅ D_4	H mm	H_1 mm	Clamping force kN	maximum tightening torque N·m	max. clamping travel mm
7,4	XXX	20 h9	4.1	M 2	M 2/13.7	10.7	7.6	1.1	0.7	0.13
12,4	XXX	29.72 h9	7.2	M 4	M 3/21	21.8	16	4.2	5	0.25
14,2	XXX	31.5 h9	12.2	M 6	M 3/23.1	24.9	19	8.5	17	0.33
20	XXX	37.5 h9	13.5	M 8	M 3/29	24.9	19	11.1	34	0.38
27	XXX	50 h9	18	M 10	M 4/39.4	28.6	22.2	20	60	0.38
35,3	XXX	56 h9	23	M 12	M 4/45.5	31.8	25.4	26.3	150	0.38
42	XXX	69.5 h9	29.3	M 16	M 5/55.9	39.6	31.8	44.5	280	0.38
51,5	XXX	75.5 h9	29.3	M 16	M 5/63.9	39.6	31.8	44.5	280	0.38
77,7	XXX	107.5 h9	29.3	M 16	M 6/92.5	45.5	37.6	44.5	280	0.38
103	XXX	132.9 h9	29.3	M 16	M 6/118	45.5	37.6	44.5	280	0.38



HALDER Centring clamping elements

Material: Base of tool steel, hardened, burnished. Clamping elements of stainless steel 1.4112, hardened and ground.

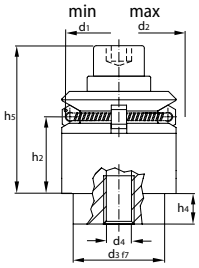
Advantage:
- Precise self-centring with an accuracy of ± 0.025 mm.
- The clamping elements allow components with rough or machined surfaces to be positively centred and pulled down at the seating point.
- Large adjustment range even at low overall height.
- Can be bolted on from above or below.

Application: For centring and clamping components with a location bore.

37 0017_8

37 0018_8

Type	37K 37 0017 Centring clamping element with clamping segments	37K 37 0018 Centring clamping element with clamping balls	D_{min} mm	D_{max} mm	d_3 f7 mm	∅ d_4 mm	h_2 mm	h_4 mm	h_5 mm	Clamping force kN
1	(XXX)	(XXX)	14.5	18.5	12	M 4	9.1	5.5	19.7	3.5
2	(XXX)	(XXX)	18.5	22.5	15	M 5	11.6	7.5	23.6	4.5
3	(XXX)	(XXX)	22.5	26.5	20	M 6	15.1	6	29.1	5
4	(XXX)	(XXX)	26.5	30.5	20	M 6	15.1	6	29.1	5
5	(XXX)	(XXX)	30.5	38.5	25	M 6	15.2	7	33.4	5
6	(XXX)	(XXX)	38.5	46.5	30	M 8	18.1	7.5	39	6.5
7	(XXX)	(XXX)	46.5	54.5	30	M 8	18.1	7.5	39	6.5
8	(XXX)	(XXX)	54.5	70.5	45	M 10	23.7	9	54.2	8
9	(XXX)	(XXX)	70.5	86.5	60	M 12	28.3	10	63	10
10	(XXX)	(XXX)	86.5	102.5	60	M 16	28.3	10	73	10



Wedge clamping segments

Material: Base of tool steel, hardened, bright finish. Base of tool steel, hardened, burnished and ground.

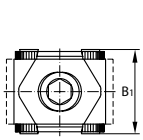
Application: Turning the clamping screw movers the two clamping jaws outwards and presses the workpieces against a fixed stop.

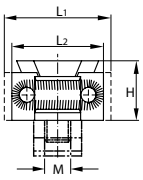
37 0023/0024 – The double wedge allows the additional facility of vertical clamping.

Note: Installation in a tapped hole or using a nut on T-slots. Horizontal or vertical multiple clamping can be performed.

37 0023

37 0022





37 0021

37 0024

Thread M	37K 37 0021	37K 37 0022	37K 37 0023	37K 37 0024	Length		Height	B_1	maximum tightening torque	Clamping force	
	HALDER										
	Simple wedge clamping jaw		Double wedge clamping jaw		37 0021 37 0022	37 0023 37 0024				37 0021 37 0022	37 0023 37 0024
	serrated	flat	serrated	flat	mm	mm	mm	mm	N·m	kN	kN
M8	(XXX)	(XXX)	–	–	27 – 31	–		29	43	20	–
M12	(XXX)	(XXX)	(XXX)	(XXX)	42 – 49	42 – 49		41	85	30	50
M16	(XXX)	(XXX)	(XXX)	(XXX)	57 – 64	58 – 66		56	210	50	80

Pitbull clamps

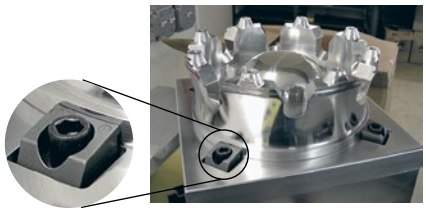
- Clamp with socket-head screw to DIN912, with oil-tight O-ring.
- Secure and precise clamping.
- Compact size, so few interference contours.

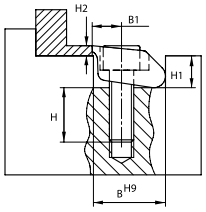
37 0025 – **Knife-edge clamp** for blanks.

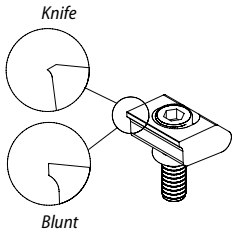
37 0030 – **Blunt edge** for general tasks.

Application: Ideal for multiple clamping.

37 0025_M6







37 0030_M6

Thread M	37M 37 0025	37M 37 0030		B_{H9}	H	B_1	H_1	H_2	Clamping width	Clamping travel	maximum tightening torque	Clamping force	Material
	Pitbull clamp												
	Blade	blunt		mm	mm	mm	mm	mm	mm	mm	N·m	kN	
M2,5	XXX	XXX	8	9.5	6.6	3.8	3.6	1.9	9.5	0.15	1.8	2.8	Steel
M4	XXX	XXX	8	12.7	9.9	5.1	4.8	2.6	12.7	0.4	5.6	6.6	Steel
M6	XXX	XXX	6	19.05	14.48	7.6	7.2	3.8	19.1	0.6	22.5	16	Steel
M10	XXX	XXX	4	25.4	18.03	10.2	11.4	6.3	25.4	1.7	40	26	Steel

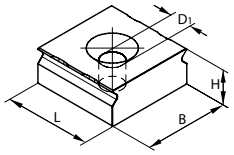
Clamping claws

- The contour of the claw generates a slight pull-down force.
- The low clamping height saves material.
- Higher cutting values due to positive clamping.

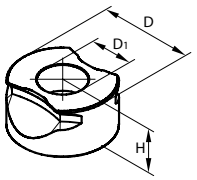
Application: Ideal for multiple clamping.

37 0034 – For use as a stop in jigs in conjunction with Pitbull clamps No. 370025 / 370030 or eccentric clamps No. 370001 / 370005 / 370008.

Supplied with: 1 clamping claw with screw.



37 0034



37 0035

Type	37M 37 0034	37M 37 0035		Screw to standard	Ø D	L	B	H	Ø D_1	recommended clamping height
	Ultra clamping claw, rectangular	VersaTouch clamping claw, round			mm	mm	mm	mm		mm
1	XXX	–	2	M5×12	–	19.05	12.7	6.35	for M5	1.5 – 1.9
2	XXX	–	2	M5×12	–	19.05	19.05	7.92	for M5	1.5 – 3
3	XXX	–	2	M5×12	–	19.05	25.4	7.92	for M5	1.5 – 3
4	(XXX)	–	1	M8×16	–	25.4	25.4	12.7	for M8	1.5 – 5.6
5	–	XXX	2	M5×10	19.05	–	–	9.53	for M5	1.5 – 3

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Clamping hooks

Pull-down clamps

Positioning pins and mounting pins

Mounting elements and stop elements

Self-aligning pads

Swing mounting

- Body made of heat treatable steel, phosphated.
- Sphere locked to prevent twisting.
  37 0057 – Sphere of carbide.

37 0055–0056/0058–0066 – Sphere of ball-bearing steel.

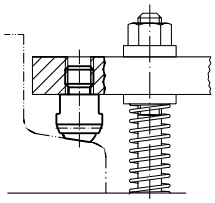
Application: Serve as stop, contact and pressure piece in jig and fixture making.

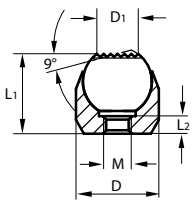
Note: Can be combined with swing clamps No. 370085 – 370086 or clamping hooks No. 370073 and 370074.

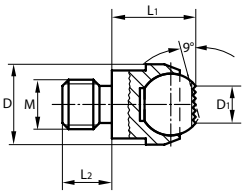
37 0055
flat

37 0056
serrated

37 0057
corrugated, carbide



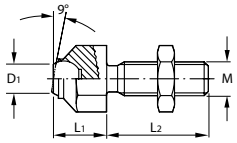


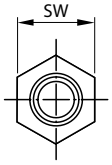


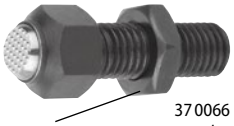
37 0058
flat

37 0059
serrated

Thread M		M3	M4	M5	M8	M10	M12	M16	M20
37K 37 0055	Swing mounting **flat, external thread**	–	–	–	XXX	XXX	XXX	XXX	XXX
37K 37 0056	Swing mounting **serrated, external thread**	–	–	–	XXX	XXX	XXX	XXX	XXX
37K 37 0057		–	–	–	XXX	XXX	XXX	–	–
37 0058	Swing mounting **flat, internal thread**	XXX	XXX	XXX	–	–	–	–	–
37K 37 0059	Swing mounting **serrated, internal thread**	XXX	XXX	XXX	–	–	–	–	–
Ø D	mm	12	18	28	13	20	20	30	50
Ø D_1	mm	7.2	10.5	20	7.2	10.5	10.5	20	34.5
L_1	mm	11	17	25	13	18	18	27	35
L_2	mm	3.5	4.4	6.3	8	10	12	16	20
maximum loading (static)	kN	10	25	90	10	25	25	90	165







37 0066
serrated

Height adjustment via the threaded nuts.

37 0065
flat

Thread M		M8	M10	M12	M16	M20
37K 37 0065	Adjustable self-aligning pads **flat, external thread**	XXX	XXX	XXX	XXX	XXX
37K 37 0066	Adjustable self-aligning pads **serrated, external thread**	XXX	XXX	XXX	XXX	XXX
AF	mm	13	17	17	24	30
Ø D_1	mm	5.8	8.6	8.6	10.5	20
L_1	mm	11.6	15.7	15.7	20.7	27.3
L_2	mm	25	30	35	40	50
maximum loading (static)	kN	8	8	15	25	90

Machinable jaws, rectangular

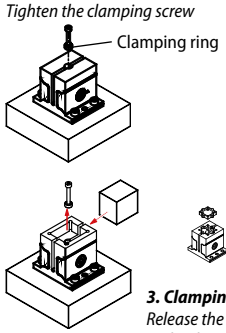
- 2 workpieces can be clamped.
- Maximum clamping stroke 0.5 mm.

Material: Clamping wedges of heat treatable steel.

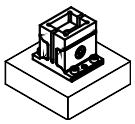
Supplied with: Including clamping for machining.

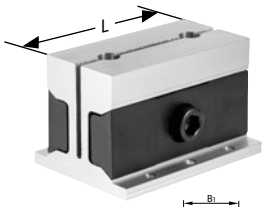
L × B1		mm	40×32	80×32	50×50	100×50
37K 37 0089	Machinable jaws		XXX	XXX	XXX	XXX
B		mm	50	50	72	72
∅ D_2		mm	7.4	7.7	11.4	11.4
H		mm	42	42	63	63
Maximum machining depth T		mm	10	10	15	15
Clamping force		kN	2.5	2.5	5.5	5.5
maximum torque		N·m	7.5	14	26	46

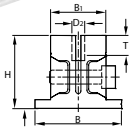
1. Insert the clamping ring:
Tighten the clamping screw

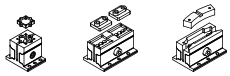


2. Machine the jaws:









3. Clamping the workpiece:
Release the clamping screw and remove the clamping ring using the socket-head screw. Insert the workpiece into the contour and tighten the clamping screw.

Clamping hook with collar

Application: For space-saving clamping of workpieces.

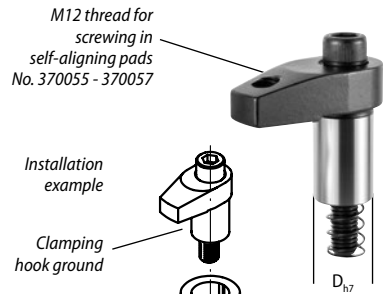
37 0070–0072 – Screwed directly into a grid hole, no countersinking required. For space-saving clamping of workpieces.

37 0073/0074 – For higher clamping forces and greater stability.

Type			1	2	3	4	5	6
37K 37 0070	Clamping hook with collar **M8**		XXX	XXX	XXX	XXX	XXX	XXX
H_1		mm	35 – 45	35 – 45	35 – 45	45 – 55	45 – 55	45 – 55
H_2		mm	14					
L_1		mm	20	25	30	20	25	30
$F_{max.}$		kN	7.9	7.3	6.7	7.9	7.3	6.7
maximum torque		N·m	20					

Type			1	2	3	4	5	6	7	8	9
37K 37 0071	Clamping hook with collar **M12**		XXX	XXX	XXX	XXX	XXX	XXX	–	–	–
37K 37 0073	Clamping hooks ground **M12**		–	–	–	–	–	–	XXX	XXX	XXX
H_1		mm	50 – 65	50 – 65	50 – 65	65 – 80	65 – 80	65 – 80	39	39	39
H_2		mm	27	29	29	27	29	29	27	29	29
L_1		mm	40	50	60	40	50	60	40	50	60
$F_{max.}$		kN	13.5	12.6	11.7	13.5	12.6	11.7	22.6	18.5	15.2
maximum torque		N·m	45	45	45	45	45	45	58.8	49	45.1
∅ D_{h7}		mm	–	–	–	–	–	–	25	25	25

Type			1	2	3	4	5	6	8	9
37K 37 0072	Clamping hook with collar **M16**		XXX	XXX	XXX	XXX	XXX	XXX	–	–
37K 37 0074	Clamping hooks ground **M16**		–	–	–	–	–	–	XXX	XXX
H_1		mm	50 – 65	50 – 65	50 – 65	65 – 80	65 – 80	65 – 80	75	75
H_2		mm	36							
L_1		mm	40	50	60	40	50	60	50	60
$F_{max.}$		kN	13.4	12.4	12	13.4	12.4	12	38	33
maximum torque		N·m	60	60	60	60	60	60	147	127.4
∅ D_{h7}		mm	–	–	–	–	–	–	32	32



Height cylinder for clamping hooks

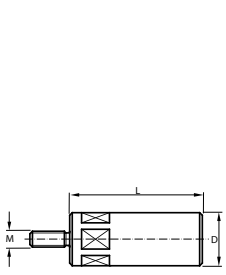
Application:

37 0077 – For extension of the swarf hook No. 370070.

37 0078 – For extension of the swarf hook No. 370071.

37 0079 – For extension of the swarf hook No. 370072.

37 0083/0084 – For guiding and lifting **ground** clamping hooks.



37 0083

37 0077

Length L		mm	32	40	50	65	80	100	125	160	200	M	∅ D mm	maximum torque N·m	∅ D_{F7} mm
37K 37 0077	Height cylinder		XXX	XXX	XXX	XXX	–	–	–	–	–	M8	24	29.4	–
37K 37 0078			–	–	XXX	XXX	XXX	XXX	XXX	XXX	XXX	M12	40	49	–
37K 37 0079			–	–	XXX	XXX	XXX	XXX	XXX	–	–	M16	50	78.4	–
37K 37 0083	Clamping hook mounting		–	–	–	–	XXX	XXX	–	–	–	M12	40	49	25
37K 37 0084			–	–	–	–	XXX	XXX	–	–	–	M16	50	78.4	32

One-Touch swing clamps

Application: ■ For light machining work.

Type			30R	30L	40R	40L
37K 37 0086	Swing clamp, with handle		XXX	XXX	XXX	XXX
maximum clamping force		N	800	800	1200	1200
max. hand force grip		N	150	150	200	200

37 0086_30L

Mounting plate No. 37 0088 available in the eShop.

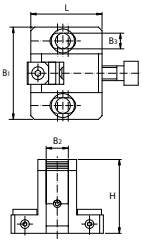
Side clamps

Material: Housing of heat treatable steel, clamping claws of tool steel.

Advantage:

Size 5–7 – The Gripp inserts have a rake angle of 1.5°.

Application: For lateral clamping of narrow and wide workpieces. The pull-down effect additionally pulls the workpiece down on to the workpiece mounting face.



Size 1 – 4

Size 5 – 7

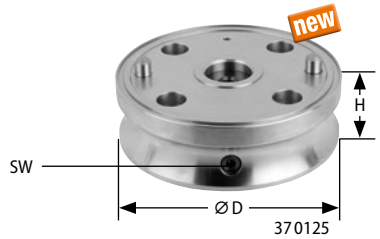
Type			1	2	3	4	5	6	7
37K 37 0137	Side clamps		(XXX)	(XXX)	(XXX)	(XXX)	(XXX)	(XXX)	(XXX)
Length L		mm	40	50	60	80	50	60	80
Height H		mm	40	50	60	80	40	50	60
B_1		mm	50	65	70	90	45	55	65
B_2		mm	12	16	20	25	45	55	65
B_3		mm	8.5	11	13	17	8.5	11	13
Clamping range		mm	5.3	7.1	8	10.2	5.3	7.1	8
Clamping force		kN	15	27	38	46	15	27	38
maximum tightening torque		N·m	25	50	90	130	25	50	90

Mechanical collet

Material: Heat treatable steel, nickel plated

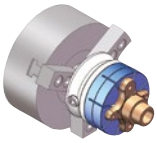
Application:

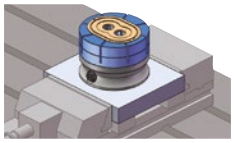
- To accept collets for **internal clamping and external clamping**.
- Collets are positioned on the arbor with 2 cylindrical dowels, and thereby secured against twisting.



370125

External Ø D		mm	65	90	120	160
37K 37 0125	Adapter for mechanical collet		(XXX)	(XXX)	(XXX)	(XXX)
Height H		mm	35	40	45	50
Width across flats AF		mm	8	8	10	10





Collets

- For clamping workpieces with complex contours for 5-face machining.
- Minimum clamping depth of 2 mm.
- Clamping stroke 0.3 mm.

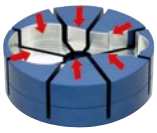
Material: High-tensile aluminium.

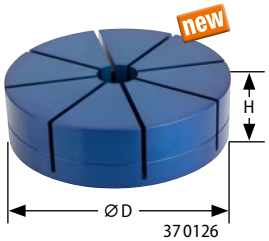
Supplied with: Clamping ring for machining.

Note:

37 0127 – For internal clamping the pull cone No. 370128 is required (see spare parts list).

External clamping





370126

Internal clamping

370127

External Ø D		mm	65	90	120	160
37K 37 0126	Collet mechanical **External clamping**		(XXX)	(XXX)	(XXX)	(XXX)
37K 37 0127	Collet mechanical **Internal clamping**		(XXX)	(XXX)	(XXX)	(XXX)
Height H (37 0126)		mm	25	35	40	45
Height H (37 0127)		mm	25	30	35	40
Maximum machining depth T		mm	10	15	20	25

Mounting pin with ball point shoulder

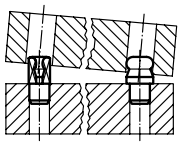
37 0040/0042 – Steel hardened and ground.

37 0041/0043 – Stainless steel ground and kolsterised®.

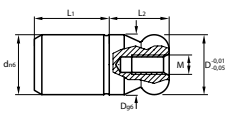
Application: Positioning workpieces at fit dimension.

37 0040/0041 – Can be used as a foot or hardened stop for jigs and fixtures.

37 0042/0043 – Tolerances in the distances from holes can be overridden.

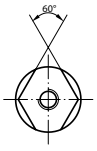


Spherical seating facilitates the jointing process. The tendency to binding due to oblique seating of the component is minimised.



Form A 37 0040

Form C 37 0042



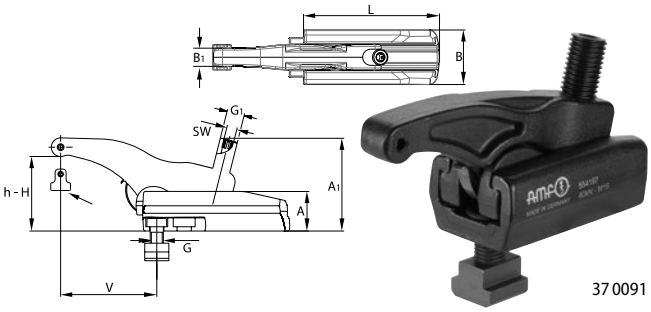
Ø D		mm	8	10	12	16	20	25	30	40	50
37K 37 0040	Mounting pin Form A **Steel**		XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
37K 37 0041	Mounting pin Form A **Stainless steel**		XXX	XXX	XXX	XXX	XXX	–	–	–	–
37K 37 0042	Mounting pin Form C **Flattened steel**		XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
37K 37 0043	Mounting pin Form C **Flattened stainless steel**		XXX	XXX	XXX	XXX	XXX	–	–	–	–
Ø d_{m6}		mm	8	10	12	16	20	25	30	40	50
L_1		mm	10	13	15	20	25	25	30	40	50
L_2		mm	8	10	12	16	20	25	30	40	50
M			M 3	M 3	M 4	M 5	M 5	M 5	M 6	M 6	M 6

Power clamp, adjustable

- Clamping force 30 or 49 kN with tightening torque of approx. 100 Nm.
- Forged clamping element of alloy heat-treatable steel, black galvanised.
- **Steplessly adjustable height and length.**
- **Low installed height.**

Supplied with: ■ Base element **and carrier.**
■ T-nut DIN 508 with T-bolt strength class 12.9.

Optional extras:
37 0091 Size 4 – Pressure pieces No. 370097.
Size 1; 2; 5 – Pressure pieces No. 370095.
Size 3; 6 – Pressure pieces No. 370096.



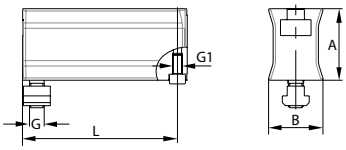
37 0091

Type	35A 37 0091	35A 37 0092	T-slot width	Fastening screw G	Clamping height h-H	Clamping force	A	A_1	B	B_1	L	V	AF	G_1
	Power clamp adjustable													
	long	short	mm		mm	kN	mm	mm	mm	mm	mm	mm	mm	
1	XXX	–	14	M12	6 – 68	30	36	85	54	18	135	13 – 110	8	M16
2	XXX	–	18	M16	6 – 68	30	36	85	54	18	135	16 – 114	8	M16
3	XXX	–	18	M16	5 – 80	43	42	105	60	20	155	16 – 134	10	M20
4	(XXX)	–	22	M20	7 – 88	49	52	125	75	25	175	19 – 165	12	M24
5	–	(XXX)	14	M12	6 – 50	32	36	78	54	18	95	12 – 82	8	M16
6	–	(XXX)	18	M16	6 – 50	40	42	92	60	20	110	15 – 95	10	M20

Spacer element for power clamps, movable

- Forged intermediate element of alloy heat-treatable steel, black galvanised.
- Other clamping heights can be achieved by using multiple height elements.

Supplied with: Including fastening set and socket-head screw.



for type	35A 37 0093	35A 37 0094	T-slot width	Fastening screw G	A	B	L	G_1
	Spacer element							
	long	short	mm		mm	mm	mm	
1/2	(XXX)	–	14	M12	60	45	135	M8
3	(XXX)	–	18	M16	70	48	155	M8
4	(XXX)	–	22	M20	80	58	175	M10
5	–	(XXX)	14	M12	60	44.5	95	M8
6	–	(XXX)	18	M16	70	47.5	110	M8

37 0093

Pressure pads for power clamps

Supplied with: Supplied with dowel pin.

Type		DG	DR	L mm	B mm	H mm	Suitable for
35A 37 0095	Pressure pad, stainless steel	XXX	XXX	25	18	19.5	Type 1 / 2 / 5
35A 37 0096		XXX	XXX	30	20	24	Type 3 / 6
35A 37 0097		(XXX)	(XXX)	36	25	28	Type 4
Version		smooth	serrated				

37 0095_DG

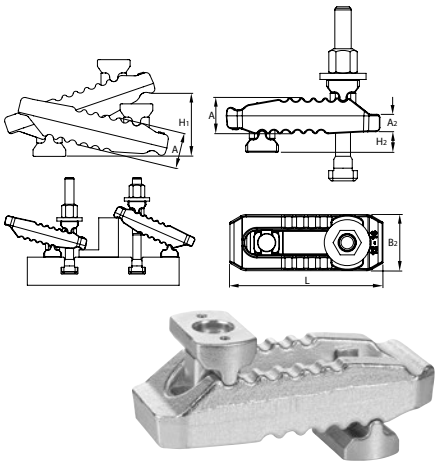
37 0095_DR

„Crocodile“ clamp with counter-holder, adjustable

Clamp with 2 clamping heads. Can be rotated depending on the application.
Pressure head and counterholder connected as a captive unit.

Advantage: Variable and quick adjustment at distances from the workpiece.
No further shims required to achieve the necessary clamping height.

Optional extras: Tee bolts No. 375300.



Type		1	2	3	4
35A 37 0115	"Crocodile" clamp with counter-holder	(XXX)	(XXX)	(XXX)	(XXX)
Clamping force up to maximum	kN	30	40	60	75
A	mm	27	36	42	51
A_2	mm	17	21	27	34
H_1	mm	0 – 55	0 – 70	0 – 80	0 – 100
H_2	mm	18	20	30	31
B_2	mm	44	55	62	70
L	mm	115	150	187	235
T-slot width	mm	10 / 12 / 14	12 / 14 / 16 / 18	16 / 18 / 20 / 22	20 / 22 / 24 / 28

Installation recommendation for the use of the clamping nuts No. 37 5300.

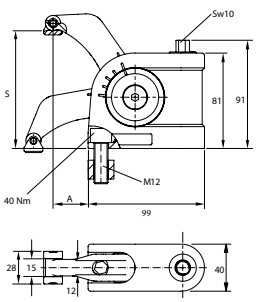
Type	G × L	Clamping height	Type	G × L	Clamping height	Type	G × L	Clamping height	Type	G × L	Clamping height
1	M10 × 80	4 – 25	2	M12 × 90	0 – 22	3	M16 × 120	2 – 29	4	M20 × 160	23 – 54
1	M10 × 90	17 – 40	2	M12 × 110	24 – 50	3	M16 × 130	15 – 43	4	M20 × 180	51 – 83
1	M10 × 100	31 – 55	2	M12 × 120	38 – 66	3	M16 × 150	43 – 72	4	M20 × 195	72 – 100
1	M12 × 80	0 – 20	2	M16 × 100	0 – 26	3	M20 × 140	18 – 48	4	M24 × 140	0 – 15
1	M12 × 90	10 – 34	2	M16 × 110	12 – 40	3	M20 × 150	31 – 63	4	M24 × 160	10 – 42
1	M12 × 100	22 – 50	2	M16 × 120	26 – 55	3	M20 × 160	45 – 78	4	M24 × 180	37 – 71

Garant Compact clamp

Material: Body and pressure arm of heat treatable steel.

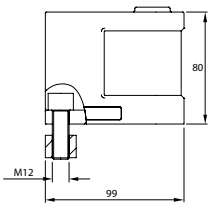
Advantage:
- Compact design, dirt-repellent and chip-repellent.
- Height scale permits quick pre-setting of the clamping height.
- Captive pressure piece. Pressure piece adapters are attached by a magnetic insert.
- Easy assembly using the clamping arm.

Optional extras: Pressure piece set No. 307148.



37 0143_67

Reach A		mm	47	67
31K 37 0143	Compact clamp		XXX	XXX
Clamping height S		mm	0 – 90	0 – 100
maximum clamping force		kN	16	12
maximum torque		N·m	105	



37 0146_80

Accessories for compact clamps

Suitable for: GARANT compact clamp No. 370143.

Height H		mm	80
31K 37 0146	Riser blocks for compact clamps		XXX

Type		3	B mm
31K 37 0148	Pressure piece set, 3 pieces	XXX	31.5

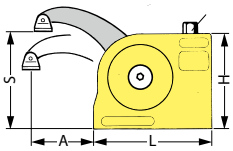
37 0148_3

KOPAL Compact clamps

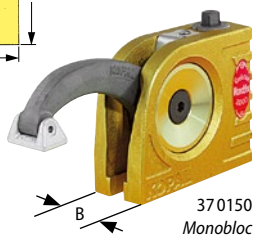
Note: Special screws No. 370450 – 370470 not included.

Compact clamp for vertical pressure

Reach A		mm	34	62	54	100
39K 37 0150	Compact clamps **Monobloc**		XXX	XXX	–	–
39K 37 0170	Compact clamps **Piccolo**		–	–	XXX	XXX
Clamping height S		mm	0 – 80	-8 – 102	-15 – 58	-40 – 90
Length L		mm	108	108	73	73
Width B		mm	40	40	32	32
Height H		mm	89	89	62.5	62.5
maximum clamping force		kN	16	12	6.5	4.2
maximum torque		N·m	80	80	30	30



Piccolo 37 0170



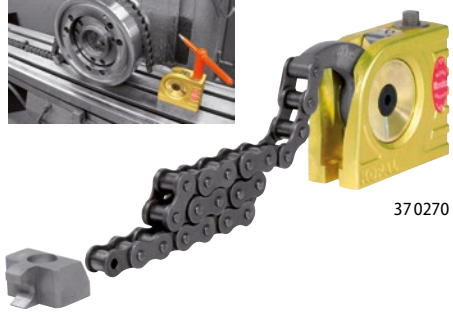
37 0150 Monobloc

Compact clamp for vertical pressure or lifting

- **With 2 different clamping arms** (straight or cranked).
- Lifting possible also by turning the clamping arm.

39K 37 0260	Compact clamps **Duo**	XXX
maximum clamping force with clamping arm position – pushed in	kN	11
maximum clamping force with clamping arm position – pulled out	kN	8
Length L	mm	120
Width B	mm	40
Height H	mm	95
Throat A (cranked clamping arm)	mm	48 – 91
Throat A (straight clamping arm)	mm	46 – 88
Clamping height downwards S (cranked clamping arm)	mm	38 – 129
Clamping height downwards S (straight clamping arm)	mm	0 – 80
Clamping height upwards S (cranked clamping arm)	mm	4 – 94
Clamping height upwards S (straight clamping arm)	mm	52 – 142

37 0260



37 0270

Chain tensioning tool with hook-in block – chain length 1 m

39K 37 0270	Chain clamping tool	XXX
Length L	mm	108
Width B	mm	40
Height H	mm	89
maximum clamping force	kN	16
maximum torque	N·m	70

Riser block up to maximum 400 mm clamping height.

Height H		mm	60	75
39K 37 0300	Riser block for compact clamps		XXX	XXX
Height H		mm	60	75
suitable for			Piccolo	Monobloc, Duo

37 0300_60

37 0300_75

Special accessories for compact clamps

37 0380 – Increases the reach by 99 mm (detachable).

37 0410 – ■ Fast retraction of the clamping element.
■ Provides optimum access when changing components.
■ Clamping range increased by bridging hole / T-slot spacing.

37 0350

37 0360

39K 37 0350	KOPAL	Clamping wrench 11 AF for Monobloc, Duo, and chain clamping tool	XXX
39K 37 0360	KOPAL	Clamping wrench 8 AF for Piccolo	XXX
39K 37 0380	KOPAL	Extension arm for Monobloc, Piccolo, and chain clamping tool	XXX
39K 37 0410	KOPAL	Slide beam for Monobloc, Duo, Piccolo, and chain clamping tool	XXX

37 0380

37 0410

37 0430 – Interchangeable, allowing optimum adaptation to component geometries.

37 0430_1 _2 _3 _4 _5

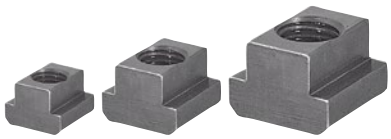
Type-No.			1	2	3	4	5
39K 37 0430	KOPAL	Swivel shoe	XXX	XXX	XXX	XXX	XXX

Thread / Length			M8×30	M10×35	M12×35	M10×40	M10×45	M12×36	M14×40	M16×40
39K 37 0450	KOPAL	Special screw for Monobloc, Duo, and chain clamping tool	–	XXX	–	XXX	XXX	XXX	XXX	XXX
39K 37 0470	KOPAL	Special screw for Piccolo	XXX	XXX	XXX	–	–	–	–	–

37 0450

37 0470

T-slot nominal size			mm	12	14	16	18	20	22
35A 37 0520	AMF	T-nut	M8	XXX	XXX	XXX	XXX	–	–
35A 37 0530	AMF	T-nut	M10	XXX	XXX	XXX	XXX	–	–
35A 37 0540	AMF	T-nut	M12	–	XXX	XXX	XXX	–	–
35A 37 0550	AMF	T-nut	M14	–	–	XXX	XXX	–	–
35A 37 0560	AMF	T-nut	M16	–	–	–	XXX	XXX	XXX


37 0520

AMF Steplessly adjustable clamps

The clamp and Tee bolt form a single unit (no loose parts).
The shape of the clamp provides for infinitely variable adjustment without additional blocks.

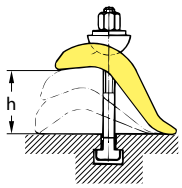
Material: Quenched and tempered steel, galvanised, screw strength 8.8 or 10.9 (depending on size!).

Application: For quick and reliable clamping of various component heights on milling machines.

Supplied with: T-bolt DIN 787 (No. 375300).

Note: Click-on clamping lever, see No. 37 0750.

Slot width a mm	35A 37 0660 Steplessly adjustable clamp	Clamping height h mm	T-bolt DIN 787, 375300	Length L mm	Width B mm
12	XXX	0 – 50	Size 1212125	140	50
14	XXX	0 – 50	Size 1412125	140	50
16	XXX	0 – 75	Size 1616160	140	50
18	XXX	0 – 75	Size 1816160	140	50
22	(XXX)	0 – 85	Size 2220200	175	60



37 0660

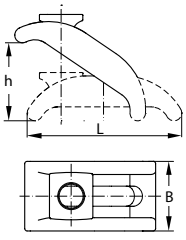
AMF Steplessly adjustable clamps, short

■ Steplessly adjustable.
■ Quenched and tempered, galvanised and blue passivated.

Supplied with: U-piece, complete with T-bolt DIN 787 (No. 375300).

Note: Click-on clamping lever, see No. 37 0750.

Slot width a mm	35A 37 0665 Steplessly adjustable clamp, short	Clamping height h mm	T-bolt DIN 787, 375300	Length L mm	Width B mm
12	XXX	0 – 35	Size 1212100	88	38
14	XXX	0 – 35	Size 1412100	88	38
16	XXX	0 – 55	Size 1616160	130	56
18	XXX	0 – 55	Size 1816160	130	56
20	XXX	0 – 65	Size 2020200	144	66



37 0665

Tapered clamps wih adjusting support screw

37 0680 – Clamp painted. Clamping height steplessly adjustable via screw (without clamping lever).
37 0685 – Quenched and tempered steel, painted, screw strength 8.8.

Material:
37 0680 – Quenched and tempered steel, screw strength 8.8 or 10.9 (depending on size).

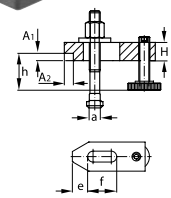
Application:
37 0685 – To achieve the **lowest clamping height, turn the clamp around.**

Supplied with: Adjusting screw and T-bolt DIN 787 (No. 375300).

Note: Click-on clamping lever, see No. 37 0750.

37 0680

37 0685



Slot width a mm	35A 37 0680 Tapered clamp with adjusting support screw	35A 37 0685 Tapered clamp with adjusting support screw offset	Clamping height h 37 0680 mm	Clamping height h 37 0685 mm	T-bolt DIN 787, 375300	Length L mm	Width B mm	Height H mm	A_1 37 0685 mm	A_2 37 0685 mm	e mm	f mm
10	XXX	–	8 – 32	–	Size 101080	80	30	15	–	–	15	30
12	XXX	XXX	10 – 40	10 – 48	Size 1212100	100	40	20	8	10	21	40
14	XXX	XXX	10 – 38	10 – 46	Size 1412100	100	40	20	8	10	21	40
16	XXX	XXX	13 – 48	13 – 58	Size 1616125	125	50	25	10	12.5	26	45
18	XXX	XXX	13 – 46	13 – 56	Size 1816125	125	50	25	10	12.5	26	45
20	–	XXX	–	16 – 77	Size 2020160	160	60	30	12	15	30	60
22	XXX	XXX	16 – 65	16 – 77	Size 2220160	160	60	30	12	15	30	60

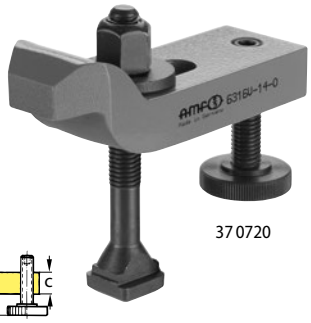
Cranked clamps with adjusting support screw

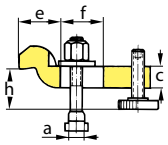
37 0720 – Clamp painted. Clamping height steplessly adjustable via screw (without clamping lever).
37 0750 – Click-on clamping lever permits quick clamping and releasing. Due to toothing the lever can be moved to any position for best access.

Suitable for:
37 0750 Size 12 – No. 370720, size 12 and 14 (= M12).
Size 16 – No. 370720, size 16 and 18 (= M16).

Material: Quenched and tempered steel, screw strength 8.8 or 10.9 (depending on size!).

Supplied with:
37 0720 – Adjusting screw and T-bolt DIN 787 (No. 375300).


37 0720



37 0750

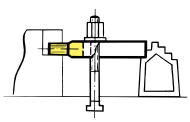
Slot width a mm	35A 37 0720 Cranked clamp with adjusting support screw	Clamping height h mm	T-bolt DIN 787, 375300	Length L mm	Width B mm	Height H mm	e mm	f mm
10	XXX	22 – 46	Size 101080	100	11	15	36	32
12	XXX	28 – 58	Size 1212100	125	14	20	44	40
14	XXX	28 – 56	Size 1412100	125	14	20	44	40
16	XXX	36 – 71	Size 1616125	160	18	25	51.5	50
18	XXX	36 – 69	Size 1816125	160	18	25	51.5	50
22	XXX	43 – 92	Size 2220160	200	22	30	59	70

Slot width a mm	35A 37 0750 Detent clamp lever
12	XXX
16	XXX

Forked clamps with pin end

Standard: **DIN 6315 C**

Material: Quenched and tempered steel, painted.



37 0800

Slot width×overall length mm	35A 37 0800 Forked clamp with pin end	Width B mm	Height H mm	Shoulder ∅ mm	for clamping screws
11×125	XXX	30	20	16	M10
14×160	XXX	40	25	20	M12; M14
18×200	XXX	50	30	24	M16; M18

Slot width×overall length mm	35A 37 0800 Forked clamp with pin end	Width B mm	Height H mm	Shoulder ∅ mm	for clamping screws
22×250	XXX	60	40	30	M20; M22
26×250	XXX	70	40	38	M24

Forked clamps offset

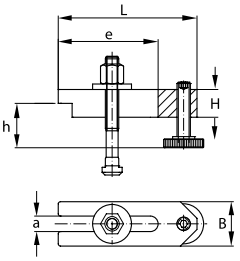
Quenched and tempered steel, painted.

Material: Screw strength 8.8.

Application: To achieve the **lowest clamping height, turn the clamp around.**

Supplied with: Adjusting screw and T-bolts DIN 787 (see No. 375300).

Note: Click-on clamping lever, see No. 37 0750.



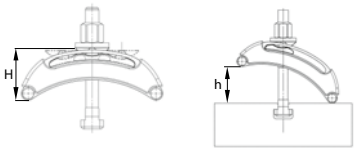
Slot width a mm	35A 37 0810 Forked clamp offset	Clamping height h mm	T-bolt DIN 787, 375300	Length L mm	Width B mm	Height H mm	e mm
10	XXX	8 – 37	Size 101080	100	30	20	70
12	XXX	10 – 48	Size 1212100	125	40	25	90
14	XXX	10 – 45	Size 1412100	125	40	25	90
16	XXX	13 – 58	Size 1616125	160	50	30	110
18	XXX	13 – 56	Size 1816125	160	50	30	110
20	XXX	16 – 77	Size 2020160	200	60	40	135
22	XXX	16 – 75	Size 2220160	200	60	40	135

Clamp with plastic cap

Clamp with plastic cap and captive contact piece.

Advantage: Saving in weight by lightweight design, variable and quick adjustment at a distance from the workpiece. No further clamp blocks are needed to achieve the required clamping height. The plain washer is captive on the clamp.

Supplied with: Complete with clamping screw DIN 787.



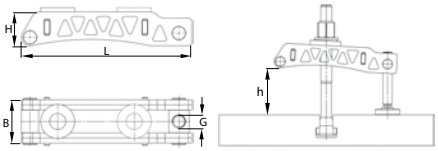
Slot width a mm	35A 37 0820 Clamp with plastic cap	Clamping height h mm	T-bolt DIN 787, 375300	Length L mm	Width B mm	Height H mm
10	XXX	0 – 15	Size 101080	80	44	32
12	XXX	0 – 33	Size 1212100	125	57	49.5
14	XXX	0 – 33	Size 1412125	125	57	49.5
16	XXX	0 – 45	Size 1616160	160	67	62
18	(XXX)	0 – 45	Size 1816160	160	67	62

Clamp, light design

Advantage: Thanks to the enormous saving in weight by lightweight design, this clamp can also be used for other clamping applications, even on rotating assemblies. No further clamp blocks are needed to achieve the required clamping height.

Supplied with: Complete with clamping screw DIN 787.

Note: The adjustment screw No. 370840 must be ordered separately.



Slot×length of clamping screw mm	35A 37 0830 Clamp, light design	Clamping height h mm	T-bolt DIN 787, 375300	Length L mm	Width B mm	Height H mm	G
20×160	(XXX)	16 – 49	Size 2020160	200	49	44	M20
20×200	XXX	16 – 89.5	Size 2020200	200	49	44	M20
24×200	(XXX)	20 – 69	Size 2824200	250	54	44	M24
24×250	(XXX)	20 – 120	Size 2824250	250	54	44	M24
36×315	(XXX)	18 – 142	Size 3630315	315	72	71	M30
48×400	(XXX)	18 – 135	Size 4236400	400	102	80	M30

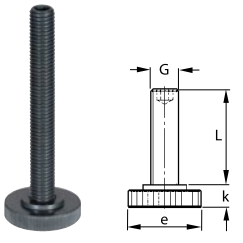
Support screw

Quenched and tempered, strength class 8.8.

Suitable for: All adjustable clamps.

Thread G × Length L	35A 37 0840 Support screw	e mm	k mm
10×39	XXX	30	8
12×49	XXX	36	10
12×94	XXX	36	10
16×55	XXX	42	13
16×90	XXX	42	13

Thread G × Length L	35A 37 0840 Support screw	e mm	k mm
20×69	XXX	50	16
20×109	XXX	50	16
24×87	(XXX)	60	20
24×137	(XXX)	60	20
30×180	(XXX)	80	24

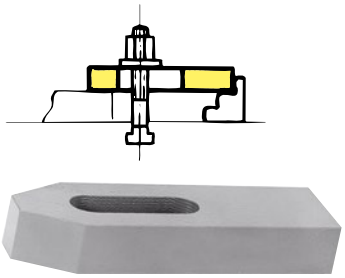


Plain clamp – DIN 6314

Material: Quenched and tempered steel, painted.

Slot width × overall length	35A 37 1000 Clamp	Height	Width	for clamping screws
mm	DIN 6314	mm	mm	
7×50	XXX	10	20	M6
9×60	XXX	12	25	M8
11×80	XXX	15	30	M10
14×100	XXX	20	40	M12; M14
14×125	XXX	20	40	M12; M14
18×125	XXX	25	50	M16; M18

Slot width × overall length	35A 37 1000 Clamp	Height	Width	for clamping screws
mm	DIN 6314	mm	mm	
18×160	XXX	25	50	M16; M18
22×160	XXX	30	60	M20; M22
22×200	XXX	30	60	M20; M22
26×200	XXX	30	70	M24
26×250	XXX	35	70	M24

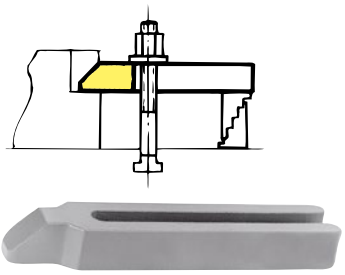


Forked clamps with shoe – DIN 6315 GN

Material: Quenched and tempered steel, painted.

Slot width × overall length	35A 37 1400 Forked clamp with shoe	Height	Width	for clamping screws
mm	DIN 6315 GN	mm	mm	
9×100	XXX	15	30	M8
11×125	XXX	20	30	M10
14×160	XXX	25	40	M12; M14
14×200	XXX	25	40	M12; M14
18×200	XXX	30	50	M16; M18
18×250	XXX	30	50	M16; M18

Slot width × overall length	35A 37 1400 Forked clamp with shoe	Height	Width	for clamping screws
mm	DIN 6315 GN	mm	mm	
22×250	XXX	40	60	M20; M22
22×315	XXX	40	60	M20; M22
26×250	XXX	40	70	M24
26×315	XXX	40	70	M24
33×315	XXX	50	80	M30
33×400	XXX	50	80	M30

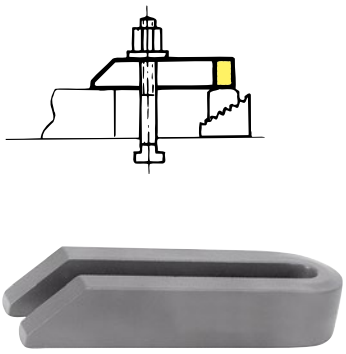


Forked clamps tapered – DIN 6315 B

Material: Quenched and tempered steel, painted.

Slot width × overall length	35A 37 1600 Forked clamp tapered	Height	Width	for clamping screws
mm	DIN 6315 B	mm	mm	
7×60	(XXX)	12	19	M6
9×80	XXX	15	25	M8
11×100	XXX	20	31	M10
14×125	XXX	25	38	M12; M14
14×160	XXX	25	38	M12; M14
14×200	XXX	25	38	M12; M14
18×160	XXX	30	48	M16; M18
18×200	XXX	30	48	M16; M18
18×250	XXX	40	48	M16; M18
22×200	XXX	40	52	M20; M22

Slot width × overall length	35A 37 1600 Forked clamp tapered	Height	Width	for clamping screws
mm	DIN 6315 B	mm	mm	
22×250	XXX	40	62	M20; M22
22×315	XXX	40	62	M20; M22
26×200	XXX	40	66	M24
26×250	XXX	40	66	M24
26×315	XXX	40	66	M24
33×250	XXX	50	74	M30
33×315	XXX	50	74	M30
33×400	XXX	50	74	M30
40×400	(XXX)	60	100	M36
43×600	(XXX)	80	123	M36; M42

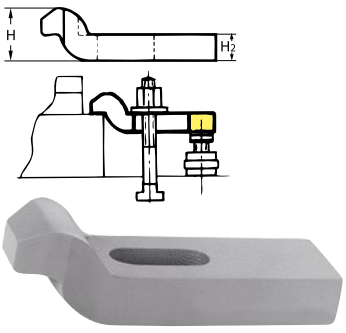


Clamps, cranked – DIN 6316

Material: Quenched and tempered steel, painted.

Slot width × overall length	35A 37 1800 Clamp, cranked	Height H	Height H_2	Width	for clamping screws
mm	DIN 6316	mm	mm	mm	
7×60	XXX	20	10	20	M6
9×80	XXX	24	12	25	M8
11×100	XXX	30	15	30	M10
14×125	XXX	40	20	40	M12; M14
18×125	XXX	50	25	50	M16; M18
18×160	XXX	50	25	50	M16; M18
22×160	XXX	60	30	60	M20; M22

Slot width × overall length	35A 37 1800 Clamp, cranked	Height H	Height H_2	Width	for clamping screws
mm	DIN 6316	mm	mm	mm	
22×200	XXX	60	30	60	M20; M22
26×200	XXX	70	35	70	M24
26×250	XXX	70	35	70	M24
33×250	(XXX)	80	40	80	M30
33×315	XXX	100	50	80	M30
43×400	XXX	120	60	100	M36; M42

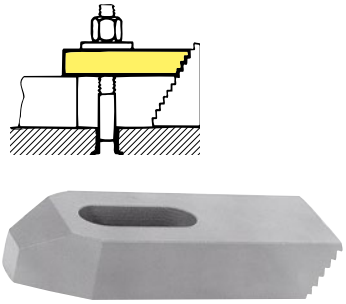


Step clamp – DIN 6314 Z

Material: Quenched and tempered steel.
Application: Only in conjunction with universal step blocks No. 372200.

Slot width × overall length	35A 37 2000 Step clamp	Height	Width	for clamping screws
mm	DIN 6314 Z	mm	mm	
7×50	XXX	10	20	M6
9×60	XXX	12	25	M8
11×80	XXX	15	30	M10
14×100	XXX	20	40	M12; M14

Slot width × overall length	35A 37 2000 Step clamp	Height	Width	for clamping screws
mm	DIN 6314 Z	mm	mm	
18×125	XXX	25	50	M16; M18
22×160	XXX	30	60	M20; M22
26×200	XXX	30	70	M24

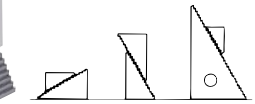


Universal step blocks

Toothed stepwise. For use in pairs. Individual blocks can be used in conjunction with clamp No. 372000.
Material: Quenched and tempered steel, painted.

Type			1	2	3
35A 37 2200	Universal step block single		XXX	XXX	XXX
Support height (used in pairs)		mm	23 – 51	39 – 107	71 – 208
Height		mm	33	66	131
Length		mm	19	35.5	68
Width		mm		30	

37 2200



37 2400

Set of universal step blocks in a wooden case

Mounting height 22 to 208 mm.
Supplied with: No. 372200 4 pairs size 1, 4 pairs size 2, 2 pairs size 3, including wooden box.

35A 37 2400	Set of universal step blocks in a solid wooden case	XXX

Screw jacks with flat support

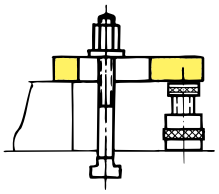
Self-locking trapezoidal thread spindle with end stop.

Screw jacks with steel base

Quenched and tempered steel, painted.
Size 200 – Extra heavy version for large workpieces.

Note: From size 52 with centring hole ∅ 12 mm for jack pads No. 375000 – 375030.

highest support height		mm	50	52	70	100	140	200	210	300
35A 37 3500	Screw jack **with steel base**		XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
lowest support height		mm	38	42	50	70	100	140	140	190
Head ∅		mm	31	50	50	50	68	80	70	80
Lower part ∅		mm	31	50	50	50	68	100	80	100
for clamp with slot width		mm	6.6 – 14	14 – 22	14 – 22	14 – 22	20 – 40	20 – 40	20 – 40	20 – 40
Load capacity		kN	25	100	100	100	120	350	170	350



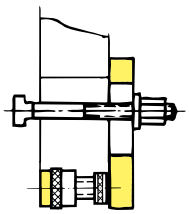
37 3500
Steel base

Screw jacks with magnetic base

37 3550 – The permanent magnet in the base of the screw jack ensures simple, lasting and precise positioning of the workpiece **on vertical faces.**
Size 88F – Modular version. Height extension up to a maximum of 350 mm, in combination with the spacer ring No. 373555.

Note: With centring hole ∅ 12 mm for jack pads No. 375000 - 375010.

highest support height		mm	62	80	88F	110
35A 37 3550	Screw jack **with magnetic base**		XXX	XXX	XXX	XXX
35A 37 3552	Screw jack **modular**		–	–	XXX	–
lowest support height		mm	52	60	75	80
Head ∅		mm		50		
Lower part ∅		mm		50		
for clamp with slot width		mm		14 – 22		
Load capacity		kN		30		



With magnet; permanent and precise positioning for vertical clamping.

37 3550
Magnetic base

Alu spacer ring

For a subsequent increase in height.
Suitable for: Alu screw jack No. 373550 / 3552 size 88F.

highest support height		mm	12,5	25	50
35A 37 3555	Alu spacer ring		XXX	XXX	XXX
∅ D		mm		50	

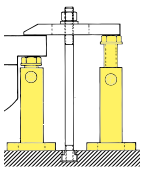
37 3555

Heavy screw jacks with locking screw

- Spindle quenched and tempered steel; body quenched and tempered steel, painted.
- Spindle with trapezoidal thread.

Note: With centring hole ∅ 12 mm for jack pads No. 375000 - 375030.

highest support height		mm	300	460	750	1250
35A 37 4400	Heavy screw jack		XXX	XXX	(XXX)	(XXX)
lowest support height		mm	200	290	430	710
Centre slot spacing		mm		150		
Head size AF		mm		65		
Load capacity		kN	80	60	50	40
Foot length		mm		220		
Foot width		mm		190		
Slot width		mm		26		



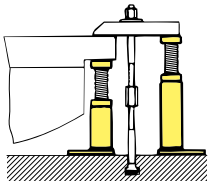
37 4400

Atlas screw jacks with locknut

- Spindle quenched and tempered steel; body grey cast iron.
- Spindle with trapezoidal thread.

Note: With centring hole ∅ 12 mm for jack pads No. 375000 - 375030.

highest support height		mm	140	200	320	550
35A 37 4000	Atlas screw jack		XXX	XXX	XXX	XXX
lowest support height		mm	100	140	200	320
Head size AF		mm	46			
Slot width		mm	18	18	22	22
Load capacity		kN	60	60	40	25



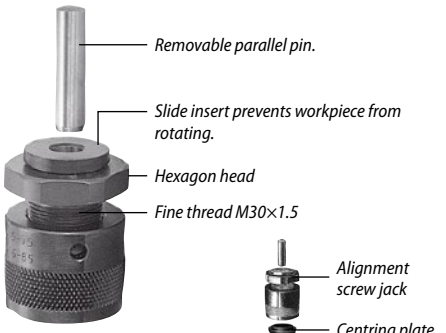
37 4000

Height setting screw jacks

- **For precision alignment** using fine pitch thread M 30×1.5. The fixed slide pad **prevents the component from rotating and moving** during alignment.
- The parallel pins supplied are ∅ 12×50 mm and ∅ 12×80 mm; they can be inserted in the centring hole, increasing the overall height by 30 or 60 mm.
- If the centring jack pad No. 375030 is placed under the screw jack, a **support height of up to approx. 1370 mm can be achieved in combination with other screw jacks.**

Note: Flat component support face with centring hole ∅ 12 mm for jack pads No. 375000 – 375030.

highest support height		mm	75	115
35A 37 4480	Height setting screw jack		XXX	XXX
lowest support height		mm	55	75
Head size AF		mm	46	
Lower part ∅		mm	50	
Load capacity		kN	30	



37 4480

Pad 37 5000

37 4480

Wedge blocks (height wedges) „Herkules“

Very rigid design; spheroidal graphite cast iron and hardened steel. **The ground wedge surfaces provide for precision and even height adjustment** with an accuracy better than 0.1mm. Either the knurled screw or a hexagon socket wrench can be used for height adjustment. The double action results in a long stroke and precise vertical movement without lateral displacement.

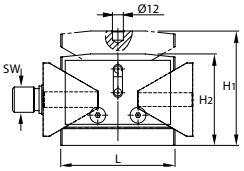
Application: **Particularly for working with heavy cast or forged parts** on large machine tools after marking-out.

Supplied with: **Interchangeable ball jack pad No. 375000.**

Note: Flat component support face with centring hole ∅ 12 mm for jack pads No. 375000 – 375030.

highest support height		mm	63	125	190
35A 37 4900	Wedge block “Herkules”		XXX	XXX	(XXX)
lowest support height		mm	50	100	170
Height adjustment per spindle rotation		mm	0.86	1.16	2.02
Load capacity		kN	40	100	250
Footprint length		mm	63	125	175
Footprint width		mm	40	115	145

Ball jack pad



Precise alignment (closer than 0.1mm), even under loads of several tons.

Jack pads

Quenched and tempered steel.

37 5020 – Specially for use with U–clamps **from 14 mm slot width.**

37 5030 – Specially designed as a centring aid for assembling several screw jacks together. Only for screw jack sizes 52, 70 and 100.

Suitable for: **Screw jacks and wedge blocks No. 373500 – 374900.**

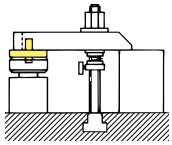
37 5000

Pad

37 5010

37 5020

Fixing attachment



37 5030

35A 37 5000	Ball pad	XXX
35A 37 5010	Vee-pad	XXX
External ∅ (37 5000)	mm	37
External ∅ (37 5010)	mm	45

Pin ∅		mm	14	25
35A 37 5020	Locating pad for forked clamps		XXX	XXX
External ∅		mm	63	78
for clamp with slot width		mm	14 – 22	from 26

35A 37 5030	Centring pad for positioning screw jacks	XXX
External ∅	mm	45

Positioning clamping pin system

Simple, quick, and precise

The clamping stud positioning system ensures quick clamping, fixing, adjusting, exchanging and securing of workpieces, plates, jigs etc.

Application examples:

Many options for combination with other clamping systems such as vices, flexible clamps and quick clamps.

Advantages of the patented spring pre-load:

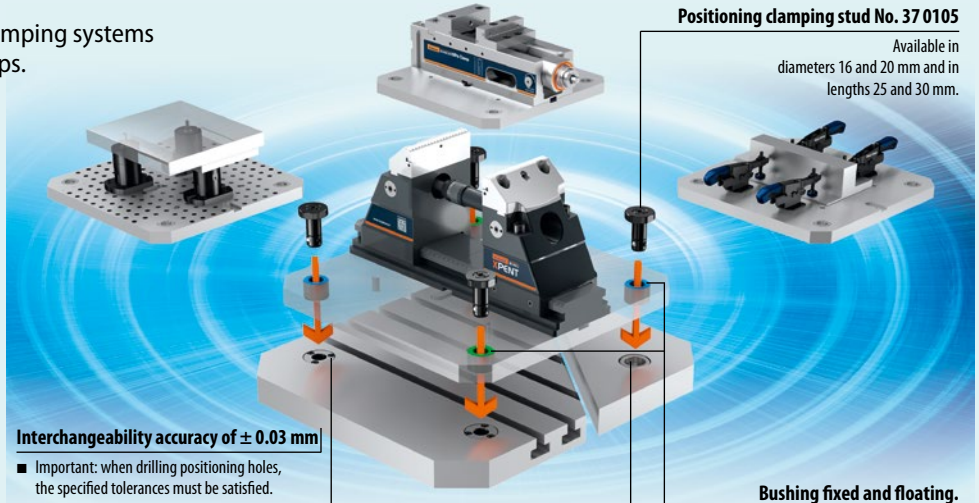
- No overloading.
- No jamming.
- No accidental release of the pins.
- Vibration-damping and oscillation-damping.

Other advantages:

- Multi-functional uses.
- Easy to install.
- Exact positioning.
- Low installed height.

GARANT positioning studs in action:
German: https://youtu.be/M63hAd3Qf2s
English: https://youtu.be/_KvpkLTpLHw

The new patented positioning system



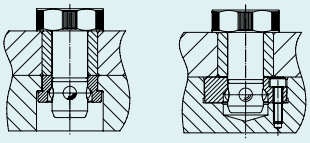
Positioning clamping stud No. 37 0105
Available in diameters 16 and 20 mm and in lengths 25 and 30 mm.

Interchangeability accuracy of ± 0.03 mm
- Important: when drilling positioning holes, the specified tolerances must be satisfied.
- Axial spacing ± 0.01 mm,
- Mounting hole H7.

Holder sockets
for screwing on No. 37 0107

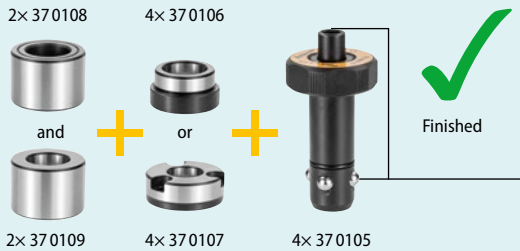
Holder sockets
for pressing in No. 37 0106

Bushing fixed and floating.
Two fixed bushings No. 37 0108 and two floating bushings No. 37 0109 must be fitted to the clamping plate. Specification of the mounting bore. Height ± 0.05 mm and ∅ H7.



37 0106 37 0107

Ready for use with the following items:



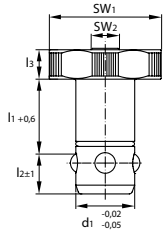
Tightening the clamping bolt centres and clamps the positioning clamping stud in the holder socket by means of four balls.

Positioning clamping pin system

Positioning clamping pin

Material: Through-hardened steel, burnished
Application: For quick clamping, fixing, adjusting, exchanging and securing of workpieces, plates, jigs etc.

∅d1×length l1		mm	16×25	16×30	20×25	20×30
31E 37 0105	Positioning clamping pin		XXX	XXX	XXX	XXX
Width across flats 1		mm	30	30	38	38
Width across flats 2		mm	6			
l_2		mm	13.6			
l_3		mm	10			
Holding force		kN	5	5	6	6
for clamping plates ±0.05		mm	20	25	20	25

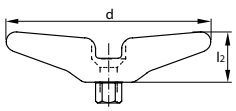


37 0105

Handle

Material: Stainless steel, painted.
Application: For quick and easy operation of the positioning clamping pin.
Supplied with: 1 pc. screw, M4.

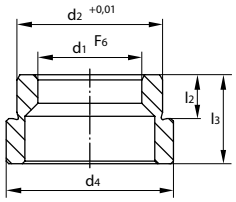
for studs ∅d1		mm	16/20
31E 37 0111	Handle for positioning clamping pin		XXX
l_2		mm	15
∅ d		mm	60



37 0111

Holder sockets for pressing in

Material: Case-hardened steel, burnished.
Application: Pressed into the machine table or baseplate from below with light pressure.

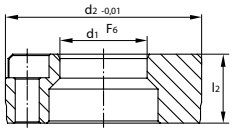


37 0106

∅d1		mm	16	20
31E 37 0106	Holder socket for pressing in		XXX	XXX
l_2		mm	6.9	8.42
l_3		mm	12.1	17.1
∅ d_2 +0.01		mm	22.03	28.03
∅ d_4		mm	28.6	32.2

Holder sockets for screw fixing

Material: Case-hardened steel, burnished.
Application: Inserted from above on to the machine table or base plate, and secured with installation screws.
Supplied with: 3 pcs. installation screws.



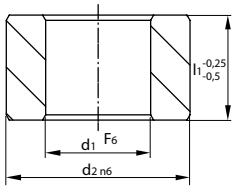
37 0107

∅d1		mm	16	20
31E 37 0107	Holder socket for screw fixing		XXX	XXX
l_2		mm	11.56	15.82
∅ d_2 -0.01		mm	36.99	44.99

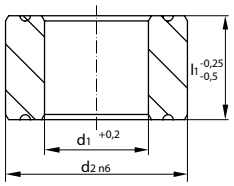
Bushings

Material: Case-hardened steel
Application: The plate to be clamped is equipped with **two central bushings** and **two floating bushings**, so as to achieve optimum repetition accuracy.

Note: Specification of the mounting bore, height ± 0.05 mm and ∅ H7.



37 0108



37 0109

Type × length l1		mm	16×20	16×25	20×20	20×25
31E 37 0108	Central bushing		XXX	XXX	XXX	XXX
31E 37 0109	Floating bushing		XXX	XXX	XXX	XXX
∅ d_1 (37 0108)		mm	16	16	20	20
∅ d_1 (37 0109)		mm	16.8	16.8	20.8	20.8
∅ d_2 n6		mm	25	25	35	35

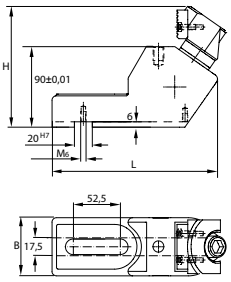
HALDER Frame clamp

Clamping elements with replaceable jaws.

Advantage:
- Angled arrangement of the movable jaws creates a pull-down effect.
- Solid construction of vibration-damping spheroidal graphite iron (GGG60).
- Optimum compatibility to the workpiece.
- Few interference contours.

Supplied with: 1 pc. interchangeable jaw (serrated / smooth).

37 0135



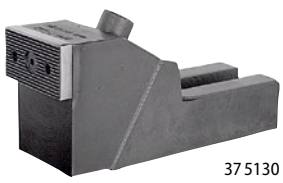
37 0136

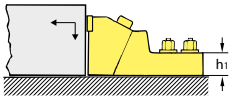
Type			1	2
37K 37 0135	Frame clamp		(XXX)	–
37K 37 0136	Frame stop		–	(XXX)
Length		mm	185	200
Width		mm	65	
Height		mm	135	132
maximum tightening torque		N·m	50	
Clamping force		kN	20	

AMF Heavy-duty clamping jaws

Very sturdy, high version with strong pull-down and clamping forces. The angled clamping mechanism ensures that the component is securely clamped down on to the table. The interchangeable jaws are reversible, the smooth side for machined, the serrated side for unmachined components.

Material: Basic body made of malleable cast iron, jaws case-hardened.
Application: **For lateral clamping of high components with high clamping force.**


37 5130



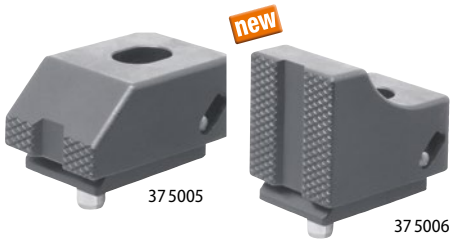
Jaw width		mm	65	75	90
35A 37 5130	Heavy-duty clamping jaw		XXX	XXX	XXX
Maximum height		mm	99	118	145
Minimum height		mm	85	100	120
Slot width		mm	19	26	38
Clamping range		mm	8	11	15
overall length		mm	179	230	265
Width across flats		mm	14	14	17
h_1		mm	38	45	56
for slot width a		mm	12; 14; 16; 18	20; 22; 24; 28; 30	32; 36; 42

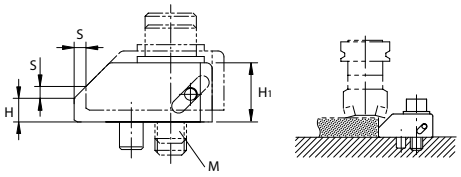
Toe clamp

Especially low-height and compact design. Pull-down effect due to oblique guidance wedge.

Material: Quenched and tempered steel.

Application: For lateral clamping of particularly flat components directly on the jig insert.





Thread		M8	M10	M12	M16
37K 37 5005	Toe clamp	(XXX)	(XXX)	(XXX)	(XXX)
37K 37 5006	Toe clamp	(XXX)	(XXX)	(XXX)	(XXX)
Width B	mm	25	30	35	40
Clamping range	mm	3	4	5	6
Height H (37 5005)	mm	6	8	9	10
Height H (37 5006)	mm	25	32	38	45
Height H_1	mm	15	19	23	25
Clamping force	kN	7	8.5	20	40
maximum tightening torque	N·m	25	50	90	200

Flat clamp – Mini-Bulle

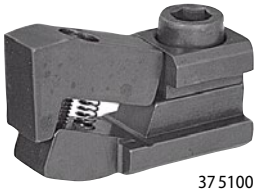
Particularly flat design (see table: height above upper table edge). By grinding down the clamp, an even lower clamping height can be achieved and the depth tolerance of the T-slot can be adjusted. The component is firmly pressed against the table due to the wedge effect of the clamp.

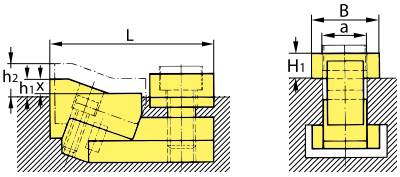
Material: Hardened steel, burnished finish.

Application: **For lateral clamping of particularly flat components** directly on the machine table.

Supplied with: Hexagon key L-wrench ISO 2936 C.

Note: Only supplied in pairs!


37 5100



Slot width a	mm	12	14	16	18	22
35A 37 5100	Pair of flat clamps Mini-Bulle	XXX	XXX	XXX	XXX	XXX
Length L	mm	52	55	68	71	89
Width B	mm	18	22	25	28	35
Clamping range	mm	1.8	1.8	2.5	2.5	3
Height above upper edge of the table h_1	mm	2.5	1.5	2.5	1.5	4.5
Height above upper edge of the table h_2	mm	13.5	13.5	17	16	21.5
grinding allowance x	mm	5	5	6	6	9
Height H_1	mm	11	11	15	15	20

Low height clamping jaws – Bulle

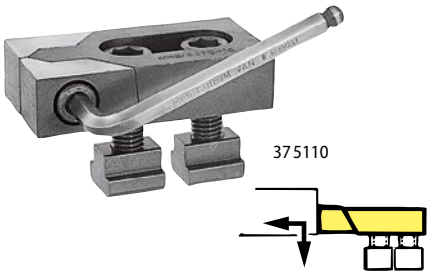
Flat design, no protruding T-bolts. Clamps at any angle to table slot. When the side screw is tightened, the component is securely clamped down on to the table by the wedge effect.

Material: Hardened steel, burnished finish.

Application: **For lateral clamping of flat plates** directly on the machine table.

Supplied with: 2 fastening screws, DIN 912, 10.9, T-nuts, and hexagon key L-wrench ISO 2936 C.

Note: Only supplied in pairs!


37 5110

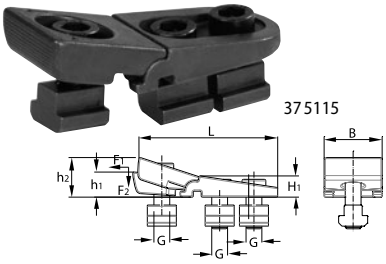
Slot width a	mm	12	14	16	18	20	22	28
35A 37 5110	Pair of low height clamping jaws Bulle with accessories	XXX	XXX	(XXX)	XXX	XXX	XXX	XXX
Length	mm	80	80	100	100	100	140	140
Width	mm	40	40	50	50	50	78	78
Height	mm	20	20	25	25	25	30	30
for clamping screws		M10	M12	M14	M16	M16	M20	M24

Flat clamp

Low design, position the flat clamp on the workpiece. Then tighten the securing screws for the machine table. The workpiece is clamped by turning the clamping screw.

Material: Hardened steel, burnished finish.

Application: **For lateral clamping of especially thin components,** in order to perform complete machining operations without interference contours. Can be used both horizontally and vertically.



Slot width a	mm	14	16	18	20	22	24	28
35A 37 5115	Flat clamp	XXX	XXX	XXX	XXX	XXX	(XXX)	(XXX)
G		M12	M12	M16	M16	M20	M20	M20
Clamping force F_1	kN	15	15	20	20	30	30	30
Clamping force F_2	kN	7.5	7.5	10	10	15	15	15
h_1	mm	16	16	19	19	22	22	22
h_2	mm	25	25	30	30	36	36	36
H_1	mm	16	16	19	19	22	22	22
Length L	mm	110	110	130	130	152	152	152
Width B	mm	44	44	56	56	62	62	62

T-bolts (clamping bolts)

T-bolt, forged and rolled thread.

37 5310 – **High-tensile design,** strength class = 12.9.

37 5300/5305 – **Standard design,** strength class = 10.9 (for M6 – M12) and strength class = 8.8 (for M14 – M24).

Standard: **DIN 787**

Supplied with:

37 5300 – **Complete,** with extra-thick washer No. 375340 and tall nut No. 375385.

37 5305/5310 – **Single,** without nut and washer.

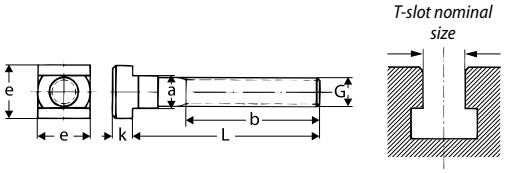
Optional extras:

37 5305/5310 – Washers, see No. 375340 and tall nuts, see No. 375385.

Note: ■ **Reading example** – size 6625 means: T-slot = 6 mm, thread G = M6, length L = 25 mm.

37 5300

37 5305



Type	35A 37 5300	35A 37 5305	35A 37 5310	T-slot nominal size	Thread G	Length L	b	a	e	k
	Tee bolt (10.9. / 8.8.)		Tee bolt (12.9.)							
	complete	single	single	mm		mm	mm	mm	mm	mm
6625	XXX	(XXX)	–	6	M6	25	15	5.7	10	4
8832	XXX	XXX	–	8	M8	32	22	7.7	13	6
8850	XXX	XXX	–	8	M8	50	35	7.7	13	6
8880	XXX	XXX	–	8	M8	80	50	7.7	13	6
101040	XXX	XXX	XXX	10	M10	40	30	9.7	15	6
101063	XXX	XXX	–	10	M10	63	45	9.7	15	6
101080	XXX	XXX	(XXX)	10	M10	80	50	9.7	15	6
1010100	XXX	XXX	XXX	10	M10	100	60	9.7	15	6
121250	XXX	XXX	XXX	12	M12	50	35	11.7	18	7
121280	XXX	XXX	XXX	12	M12	80	55	11.7	18	7
1212100	XXX	XXX	XXX	12	M12	100	65	11.7	18	7
1212125	XXX	XXX	XXX	12	M12	125	75	11.7	18	7
1212160	XXX	XXX	XXX	12	M12	160	100	11.7	18	7
1212200	XXX	(XXX)	XXX	12	M12	200	120	11.7	18	7
141250	XXX	XXX	XXX	14	M12	50	35	13.7	22	8
141280	XXX	XXX	XXX	14	M12	80	55	13.7	22	8
1412100	XXX	XXX	XXX	14	M12	100	65	13.7	22	8
1412125	XXX	XXX	XXX	14	M12	125	75	13.7	22	8
1412160	XXX	XXX	XXX	14	M12	160	100	13.7	22	8
1412200	XXX	XXX	XXX	14	M12	200	120	13.7	22	8
161463	XXX	XXX	–	16	M14	63	45	15.7	25	9
161480	XXX	XXX	–	16	M14	80	55	15.7	25	9
1614100	XXX	XXX	–	16	M14	100	65	15.7	25	9
1614125	XXX	XXX	–	16	M14	125	75	15.7	25	9
1614160	XXX	XXX	–	16	M14	160	100	15.7	25	9
1614250	XXX	XXX	–	16	M14	250	120	15.7	25	9
161663	XXX	XXX	XXX	16	M16	63	45	15.7	25	9
1616100	XXX	XXX	XXX	16	M16	100	65	15.7	25	9
1616125	XXX	XXX	XXX	16	M16	125	85	15.7	25	9
1616160	XXX	XXX	XXX	16	M16	160	100	15.7	25	9
1616250	XXX	XXX	XXX	16	M16	250	150	15.7	25	9
181663	XXX	XXX	XXX	18	M16	63	45	17.7	28	10
1816100	XXX	XXX	XXX	18	M16	100	65	17.7	28	10
1816125	XXX	XXX	XXX	18	M16	125	85	17.7	28	10
1816160	XXX	XXX	XXX	18	M16	160	100	17.7	28	10
1816250	XXX	XXX	XXX	18	M16	250	150	17.7	28	10
202080	XXX	XXX	XXX	20	M20	80	55	19.7	32	12
2020125	XXX	XXX	XXX	20	M20	125	85	19.7	32	12
2020200	XXX	XXX	XXX	20	M20	200	125	19.7	32	12
2020315	XXX	XXX	XXX	20	M20	315	190	19.7	32	12
222080	XXX	XXX	XXX	22	M20	80	55	21.7	35	14
2220125	XXX	XXX	XXX	22	M20	125	85	21.7	35	14
2220200	XXX	XXX	XXX	22	M20	200	125	21.7	35	14
2220315	XXX	XXX	XXX	22	M20	315	190	21.7	35	14
2424160	XXX	XXX	XXX	24	M24	160	110	23.7	40	16
2824100	XXX	XXX	(XXX)	28	M24	100	70	27.7	44	18
2824160	XXX	XXX	XXX	28	M24	160	110	27.7	44	18
2824250	XXX	XXX	XXX	28	M24	250	150	27.7	44	18
2824400	XXX	XXX	XXX	28	M24	400	240	27.7	44	18
4236250	(XXX)	XXX	–	42	M36	250	175	41.6	65	26

T-nuts

Standard: **DIN 508**

Material:

37 5315 – Quenched and tempered steel, strength 10.

37 5320 – Quenched and tempered steel, unhardened (= blank, without thread).

Application:

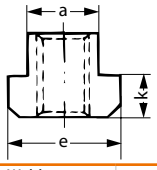
37 5315 – For combination with studs or bolts.

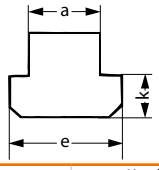
37 5320 – Blanks for production of T-nuts with non-standard threads.

Note: Full load-bearing capacity only when threaded for the **entire** nut length.

37 5315

37 5320



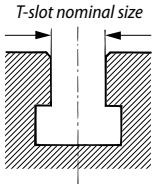


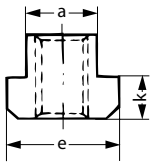
T-slot nominal size	35A 37 5315	35A 37 5320	Thread	Nut height	Width a	Width e	Height k
	T-nut		37 5315				
mm	with thread	Blank		mm	mm	mm	mm
6	XXX	XXX	M5	8	5.7	10	4
8	XXX	XXX	M6	10	7.7	13	6
10	XXX	XXX	M8	12	9.7	15	6
12	XXX	XXX	M10	14	11.7	18	7
14	XXX	XXX	M12	16	13.7	22	8
16	XXX	XXX	M14	18	15.7	25	9
18	XXX	XXX	M16	20	17.7	28	10
20	XXX	XXX	M18	24	19.7	32	12
22	XXX	XXX	M20	28	21.7	35	14
24	XXX	XXX	M 22	32	23.7	40	16
28	XXX	XXX	M24	36	27.7	44	18
32	XXX	–	M 27	40	31.6	50	20
36	XXX	–	M 30	44	35.6	54	22

T-nuts, long version

Material: Quenched and tempered steel, strength 10.

Application: Particularly suitable for high precision machines, to protect table slots.





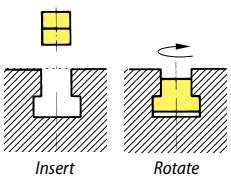
37 5325

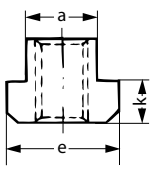
T-slot nominal size / thread	35A 37 5325	Thread	Nut height	Width a	Width e	Height k	Length
	T-nut long						
mm			mm	mm	mm	mm	mm
8/M6	XXX	M6	10	7.7	13	6	26
10/M8	XXX	M8	12	9.7	15	6	30
12/M10	XXX	M10	14	11.7	18	7	36
14/M12	XXX	M12	16	13.7	22	8	44
16/M14	XXX	M14	18	15.7	25	9	50
18/M16	XXX	M16	20	17.7	28	10	56
20/M18	(XXX)	M18	24	19.7	32	12	64
22/M20	XXX	M20	28	21.7	35	14	70
28/M24	XXX	M24	36	27.7	44	18	88

T-nut Rhombus

Material: Quenched and tempered steel.

Application: **For the insertion of the T-nut from above** through the top of the T-slot. (Load capacity lower than No. 375315 due to reduced bearing surface).





37 5330

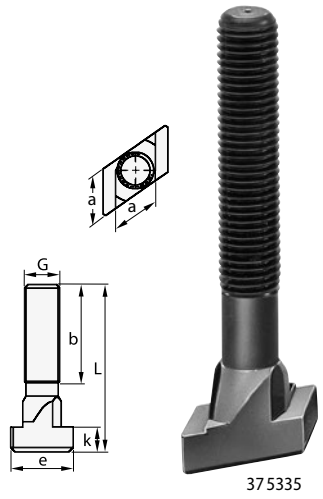
T-slot nominal size / thread	35A 37 5330	Thread	Nut height	Width e	Width a	Height k
	Rhombus T-nut					
mm			mm	mm	mm	mm
12/M10	XXX	M10	14	18	11.7	7
14/M12	XXX	M12	16	22	13.7	8
16/M14	XXX	M14	18	25	15.7	9
18/M16	XXX	M16	20	28	17.7	10
20/M18	(XXX)	M18	24	32	19.7	12
22/M20	XXX	M20	28	35	21.7	14
28/M24	XXX	M24	36	44	27.7	18
36/M30	XXX	M30	44	54	35.6	22

Rhombus T-bolts

- Forged and milled
- T-slots, rolled thread.
- Hardened to strength class 10.9.

Application: Later insertion of an additional clamping point is made easier on long tables. The T-bolt is inserted into the T-slot from above.

T-slot nominal size×length L	35A 37 5335 Rhombus T-bolt	T-slot nominal size	Thread G	Length L	b	a	e	k
mm		mm		mm	mm	mm	mm	mm
14×50	XXX	14	M12	50	35	13.7	22	8
14×80	XXX	14	M12	80	55	13.7	22	8
14×125	XXX	14	M12	125	75	13.7	22	8
18×63	XXX	18	M16	63	45	17.7	28	10
18×100	XXX	18	M16	100	65	17.7	28	10
18×160	XXX	18	M16	160	100	17.7	28	10
22×80	XXX	22	M20	80	55	21.7	35	14
22×125	XXX	22	M20	125	85	21.7	35	14
22×200	XXX	22	M20	200	120	21.7	35	14
28×100	XXX	28	M24	100	70	27.7	44	18
28×125	XXX	28	M24	125	85	27.7	44	18
28×250	XXX	28	M24	250	150	27.7	44	18



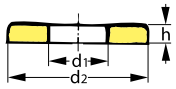
37 5335

Washers, extra strong

Extra strong, flat-pressed and hardened, edges bevelled.

Standard: **DIN 6340**

Application: Particularly suitable for clamps.
Especially for making jigs and fixtures.



37 5340

for threads		M6	M8	M10	M12	M14	M16	M18	M20	M22	M24	M27	M30	M36
35A 37 5340	Plain washer	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	(XXX)
Bore ∅ d_1	mm	6.4	8.4	10.5	13	15	17	19	21	23	25	28	31	38
External ∅ d_2	mm	17	23	28	35	40	45	45	50	50	60	68	68	80
Thickness h	mm	3	4	4	5	5	6	6	6	8	8	10	10	10

Spherical seat washers and collared washers

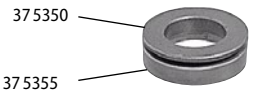
Form C and D case-hardened, form G quenched and tempered.

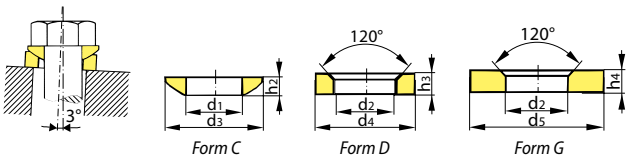
Standard: **DIN 6319** (form G similar to DIN 6319).

Application: Angular compensation up to 3° when used in sets.

37 5355 – Form D may only be used over holes, so that the washer is in full contact.

37 5360 – Due to its large diameter, form G is suitable even for clamping over the slot of forked clamps.





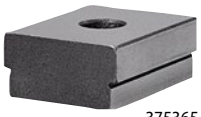
Form C Form D Form G

for threads		M8	M10	M12	M14	M16	M20
35A 37 5350	Spherical seat washer **Form C**	XXX	XXX	XXX	XXX	XXX	XXX
35A 37 5355	Collared washer **Form D**	XXX	XXX	XXX	XXX	XXX	XXX
35A 37 5360	Collared washer **Form G**	XXX	XXX	XXX	XXX	XXX	XXX
Bore ∅ d_1 (37 5350)	mm	8.4	10.5	13	15	17	21
Bore ∅ d_2 (37 5355, 37 5360)	mm	9.6	12	14.2	16.5	19	23.2
External ∅ d_3 (37 5350)	mm	17	21	24	28	30	36
External ∅ d_4 (37 5355)	mm	17	21	24	28	30	36
External ∅ d_5 (37 5360)	mm	24	30	36	40	44	50
Thickness h_2 (37 5350)	mm	3.2	4	4.6	5	5.3	6.3
Thickness h_3 (37 5355)	mm	3.5	4.2	5	5.6	6.2	7.5
Thickness h_4 (37 5360)	mm	5	5	6	6	7	8

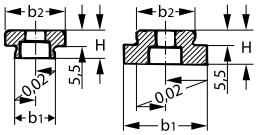
High precision tenons for aligning appliances and tools

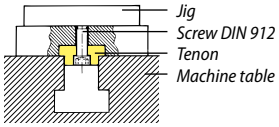
Precision ground all round, resulting in quick alignment times for appliances, vices etc., which are to be aligned parallel to the table slots of machine tools.
A dial indicator is thus no longer required.

Material: Steel C 15, case-hardened.



375365





Stepped fixed tenons for screw attachment

Accuracy: **Dimension b = fit h6.**

Application: **These tenons are screwed in pairs into the standard 20 mm-wide tenon slot of jigs.** By changing the tenons it is possible to work **on several machines with different slot widths** with one jig each.

Note: **Size 20** see No. 375370

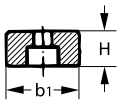
Slot size b_1 of the machine	35A 37 5365 Stepped tenon ground	Slot size b_2 of the jig	for screws DIN 84, DIN 912	Length	Height H
mm		mm		mm	mm
10	XXX	20	M6×10	22	10
12	XXX	20	M6×10	22	10
14	XXX	20	M6×16	25	10
16	XXX	20	M6×16	25	10

Slot size b_1 of the machine	35A 37 5365 Stepped tenon ground	Slot size b_2 of the jig	for screws DIN 84, DIN 912	Length	Height H
mm		mm		mm	mm
18	XXX	20	M6×16	25	10
22	XXX	20	M6×16	32	12
24	(XXX)	20	M6×16	32	12
28	XXX	20	M6×16	32	12

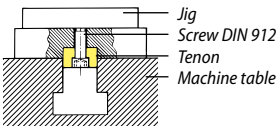
Flat tenons for screw attachment

Accuracy: **Dimension b = fit h6.**

Application: Flat tenons are appropriate **when a vice is always used on a machine with the same slot width.**



375370



Slot size b_1 of the machine and jig	35A 37 5370 Flat tenon ground	for screws DIN 84, DIN 912	Length	Height H
mm			mm	mm
10	XXX	M4×10	20	8
12	XXX	M5×12	20	8
14	XXX	M6×16	22	10
16	XXX	M6×16	22	10

Slot size b_1 of the machine and jig	35A 37 5370 Flat tenon ground	for screws DIN 84, DIN 912	Length	Height H
mm			mm	mm
18	XXX	M6×16	22	10
20	XXX	M6×16	22	10
22	XXX	M6×16	32	12
24	(XXX)	M6×16	32	12

Loose tenons for adjustment

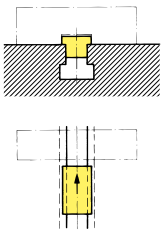
Standard: **DIN 6323**

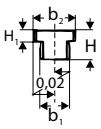
Application: These loose tenons are inserted sideways into the slots after rough alignment of the fixture. **When transporting the fixture, there are then no tenons protruding underneath and the table cannot be damaged.** 2 pieces are sufficient per machine, or 4 pieces for a double set-up.

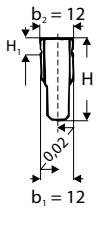
_12/20 – 18

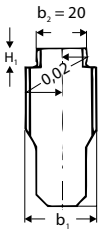
_12/12

_22 – 28







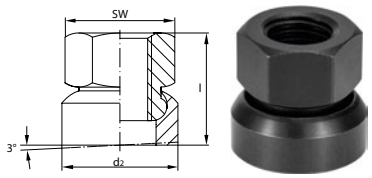


Slot size b_1 of the machine	35A 37 5375 Loose tenon ground f or adjustment	Slot size b_2 of the jig	Height H	Height H_1	Length
mm		mm	mm	mm	mm
10	(XXX)	12	12	3.6	20
12/12	XXX	12	28.6	5.5	20
12/20	XXX	20	14	5.5	32
14	XXX	20	14	5.5	32
16	XXX	20	14	5.5	32
18	XXX	20	14	5.5	32
22	XXX	20	50.5	7	40
28	XXX	20	61.5	7	40

HALDER Collar nuts with conical seat

Material: Through-hardened steel, strength 10.

Note: Hexagon nut with enlarged seating area available on request.



Threads	37K 37 5384 Collar nut with conical seat	Overall length mm	Width across flats AF mm	Ø d_2 mm
M8	XXX	14	13	17
M10	XXX	17.5	16	21
M12	XXX	21.5	18	24
M16	XXX	28	24	30
M20	XXX	35	30	36
M24	(XXX)	42.5	36	44
M30	(XXX)	56	46	55

Nuts for studs and T-bolts

37 5385 – **Tall nut** (= 1.5 d tall) with one flat face to rest on plain washer No. 375340 and a convex face for positioning in collared washer No. 375355 D or No. 375360 G.

37 5390 – **Collar nut** (=1.5 d high) DIN 6331, forged.

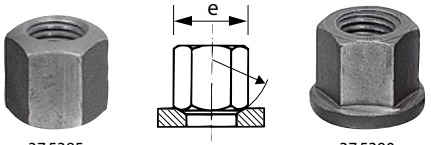
37 5390 Size M14 – Turned and milled.

Standard:

37 5385 – **DIN 6330 B**

37 5390 – **DIN 6331**

Material: Quenched and tempered steel, strength 10.



37 5385 37 5390

Thread	35A 37 5385 High nut	35A 37 5390 Collar nut	Overall length mm	AF mm	Distance across corners e mm	Collar Ø mm	Collar height mm
M6	XXX	–	9	10	11.05	–	–
M8	XXX	XXX	12	13	14.4	18	3.5
M10	XXX	XXX	15	16	17.8	22	4
M12	XXX	XXX	18	18	20.03	25	4
M14	XXX	XXX	21	21	23.4	28	4.5
M16	XXX	XXX	24	24	26.8	31	5
M18	XXX	XXX	27	27	30.1	34	5
M20	XXX	XXX	30	30	33.5	37	6
M24	XXX	XXX	36	36	40	45	6
M30	(XXX)	XXX	45	46	51.3	58	8

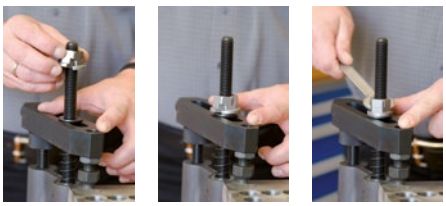
Two-part threaded nuts TWINNUT

Two-part threaded nut for quick assembly applications. Tightening capability equal to standard nut of strength class 10.

37 5391 – Nut **without** collar.

37 5392 – Nut **with** collar.

Advantage: Quick fitting on to threaded rods that are long, corroded, up to 20° bent or damaged.



Thread		M8	M10	M12	M16	M20
35A 37 5391	TWINNUT nut	XXX	XXX	XXX	XXX	XXX
35A 37 5392		XXX	XXX	XXX	XXX	XXX
Overall height (37 5391)	mm	8	10	12	16	20
Overall height (37 5392)	mm	12	14	16	21	26

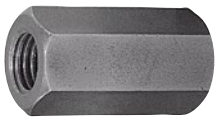
37 5391 37 5392

Extension nut

Double length of tall nut No. 375385 (= 3.0 d tall), both ends flat.

Material: Quenched and tempered steel, strength 10.

Application: For connecting together two studs.



37 5395

Thread	35A 37 5395 Extension nut	Overall length mm	AF mm	Distance across corners e mm
M6	XXX	18	10	11.05
M8	XXX	24	13	14.4
M10	XXX	30	16	17.8
M12	XXX	36	18	20.03
M14	XXX	42	21	23.4
M16	XXX	48	24	26.8
M18	XXX	54	27	30.1
M20	XXX	60	30	33.5
M22	XXX	66	34	37.7
M24	XXX	72	36	40

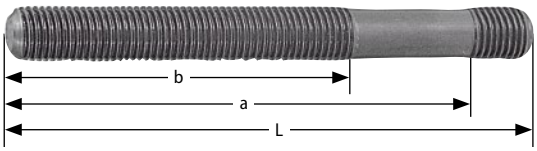
Studs (extension bolts)

Rolled thread.

Standard: **DIN 6379**

Material: Heat–treated steel
Strength class:
- M6 – M12 = 10.9
- M14 – M30 = 8.8

Application: For individual combination of T-bolts in conjunction with T-nuts and tenons No. 375315 – 375330, nuts No. 375385 – 378395 and plain washers No. 375340 – 375360.



Thread × length L	35A 37 5380 Stud DIN 6379	Length a mm	Length b mm
M6×32	XXX	23	16
M6×50	XXX	41	30
M6×80	XXX	71	50
M8×40	XXX	29	20
M8×63	XXX	52	40
M8×100	XXX	89	63
M8×160	XXX	149	100
M10×50	XXX	37	25
M10×80	XXX	67	50
M10×125	XXX	112	75
M10×200	XXX	187	122
M12×63	XXX	48	32
M12×80	XXX	65	50
M12×100	XXX	85	63
M12×125	XXX	110	75
M12×200	XXX	185	122

Thread × length L	35A 37 5380 Stud DIN 6379	Length a mm	Length b mm
M14×63	XXX	46	32
M14×80	XXX	63	50
M14×100	XXX	83	63
M14×125	XXX	108	75
M14×160	XXX	143	100
M14×250	XXX	233	160
M16×80	XXX	61	50
M16×125	XXX	106	75
M16×160	XXX	141	100
M16×250	XXX	231	160
M18×80	XXX	57	50
M18×125	XXX	102	75
M18×200	XXX	177	122
M18×315	XXX	292	180
M20×80	XXX	53	32
M20×125	XXX	98	70

Thread × length L	35A 37 5380 Stud DIN 6379	Length a mm	Length b mm
M20×200	XXX	173	122
M20×250	XXX	223	160
M20×315	XXX	288	200
M20×500	XXX	473	315
M22×160	XXX	129	100
M22×250	XXX	219	160
M22×400	(XXX)	369	250
M24×100	XXX	65	45
M24×160	XXX	125	100
M24×250	XXX	215	160
M24×400	XXX	365	250
M24×630	XXX	595	315
M30×200	XXX	157	122
M30×315	XXX	272	200
M30×500	XXX	457	315
M30×700	XXX	657	400

Clamping elements basic sets

- All parts made of quenched and tempered steel.
- T-slot bolts quenched and tempered, rolled thread.

Application: Ideal for **toolmaking, manufacturing,** and **training jigs.**

37 5410

T-slot nominal size / thread mm	35A 37 5410 Basic assortment of clamping elements	14/M12	16/M14	18/M16
		XXX	XXX	XXX
Content: Clamps		2 pcs./ 14×100 mm; 2 pcs./ 14×160 mm	2 pcs./ 14×100 mm; 2 pcs./ 14×160 mm	2 pcs./ 18×125 mm; 2 pcs./ 18×200
Clamp blocks		4 pcs. / size 2; 4 pcs. size 3	4 pcs. / size 2; 4 pcs. / size 3	4 pcs. / size 2; 4 pcs. size 3
T-bolts		2 pcs./ M12×14×50 mm; 4 pcs./ M12×14×80 mm; 4 pcs./ M12×14×125 mm	2 pcs./M14×16×63 mm; 4 pcs./M14×16×100 mm; 4 pcs./M14×16×160 mm	2 pcs./M16×18×63 mm; 4 pcs./M16×18×80 mm; 4 pcs./M16×18×160 mm
Studs		2 pcs. size M12×100	2 pcs. size M14×100 mm; 2 pcs. size M14×160 mm	2 pcs. size M16×200 mm; 4 pcs. size M16×125 mm
tall nuts		6 pcs. size M12	6 pcs. size M14	6 pcs. size M16
Washers		6 pcs. size M12	6 pcs. size M14	6 pcs. size M16
Extension nuts		2 pcs. size M12	2 pcs. size M14	4 pcs. size M16

T-slot nominal size / thread mm	35A 37 5415 Basic assortment of clamping elements	14/M12
		XXX
Content: Clamp		2 pcs. 14×125 mm; 4 pcs. 14×160 mm; 2 pcs. 14×200 mm
Clamp blocks		4 pcs. / size 1; 4 pcs. size 2
T-bolts		4 pcs./M12×14×100 mm; 4 pcs./M12×14×160 mm; 4 pcs./M12×14×200 mm
Screw jacks		2 pcs. size50; 2 pcs. size110; 2 pcs. size140
Nuts		12 pcs. size M12
Washers		12 pcs. size M12

37 5415

HOLEX Clamping sets

Application: Ideal for toolmaking, manufacturing and training jigs.

T-slot nominal size / thread mm		14/M12	18/M16	22/M20
32X 37 5420	T-bolt set	XXX	XXX	XXX
Content: Studs		4 pcs. / M12×80 mm; 4 pcs. / M12×125 mm; 4 pcs. / M12×160 mm	4 pcs. / M16×100 mm; 4 pcs. / M16×125 mm; 4 pcs. / M16×160 mm	4 pcs. / M20×125 mm; 4 pcs. / M20×160 mm; 4 pcs. / M20×200 mm
Nuts for T-slots		8 pcs. size M12×14 mm	8 pcs. size M16×18 mm	8 pcs. size M20×22 mm
Hexagon nuts		8 pcs. size M12	8 pcs. size M16	8 pcs. size M20
Washers		8 pcs. size M12	8 pcs. size M16	8 pcs. size M20
Extension nuts		2 pcs. size M12	2 pcs. size M16	2 pcs. size M20

37 5420

T-slot nominal size / thread mm		14/M12	18/M16	22/M20
32X 37 5425	Set of assorted clamping elements	XXX	XXX	XXX
Content: Plain clamp		4 pcs. / 14×100 mm	4 pcs. / 18×125 mm	4 pcs. / 22×160 mm
Clamp blocks		4 pcs. / size 3		
T-nut		6 pcs. / M12×14	6 pcs. / M16×18	6 pcs. / M20×22
Studs		4 pcs. / M12×125 mm; 4 pcs. / M12×160 mm; 4 pcs. / M12×200 mm	4 pcs. / M16×125 mm; 4 pcs. / M16×160 mm; 4 pcs. / M16×200 mm	4 pcs. / M20×125 mm; 4 pcs. / M20×160 mm; 4 pcs. / M20×200 mm
tall nuts		6 pcs. size M12	6 pcs. size M16	6 pcs. size M20
Washers		6 pcs. size M12	6 pcs. size M16	6 pcs. size M20
Extension nuts		2 pcs. size M12	2 pcs. size M16	2 pcs. size M20

37 5425

AMF T-bolt set

All parts quenched and tempered. Strength class 8.8 or 10.
Presented in a sturdy wooden box with hinged lid.

T-slot nominal size / thread mm		10/M10	12/M12	14/M12	18/M16
35A 37 5400	T-bolt set	XXX	XXX	XXX	XXX
Supplied with: T-bolts No. 375300 DIN 787		4 pcs./63 mm; 4 pcs./100 mm; 2 pcs./40 mm	4 pcs./80 mm; 4 pcs./125 mm; 2 pcs./50 mm	4 pcs./80 mm; 2 pcs./50 mm	4 pcs./100 mm; 2 pcs./63 mm
Studs No. 375380 DIN 6379		4 pcs./ 50 mm; 4 pcs./80 mm; 4 pcs./ 200 mm	4 pcs./63 mm; 4 pcs./100 mm; 4 pcs./200 mm	4 pcs./63 mm; 4 pcs./100 mm; 4 pcs./125 mm; 4 pcs./200 mm	4 pcs./80 mm; 4 pcs./125 mm; 4 pcs./160 mm
T-nuts No. 375315 DIN 508		–	–	4 pcs.	4 pcs.
tall nuts No. 375385 DIN 6330 B,		4 pcs.			
Extension nuts No. 375395		4 pcs.			
Plain washers No. 375340 DIN 6340		4 pcs.			
Spherical seat washers and collared washers No. 375350 / 5360 DIN 6319 C + G		4 pcs.			

37 5400

AMF Sets of assorted clamping elements

Consisting of various clamping elements, which are required for quick clamping of tools, j igs or components to T-slot tables. All parts are made of quenched and tempered steel a nd can be reordered individually.

Supplied with: Combination spanner, anti-seize compound, wooden case

37 5405

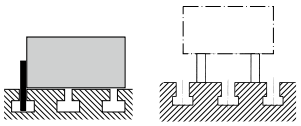
T-slot nominal size / thread mm		10/M10	12/M12	14/M12	18/M16
35A 37 5405	Assortment of clamping elements	XXX	XXX	XXX	XXX
Clamping height double set up	mm	2 – 230	2 – 270	2 – 270	2 – 270
Clamping height quadruple set up	mm	2 – 140	2 – 160	2 – 160	2 – 160
Supplied with: T-bolts No. 375300 DIN 787		4 pcs./ 63 mm; 4 pcs./ 100 mm; 2 pcs./ 40 mm	4 pcs./ 80 mm; 4 pcs./ 125 mm; 2 pcs./ 50 mm	4 pcs./ 80 mm; 4 pcs./ 125 mm; 2 pcs./ 50 mm	4 pcs./ 100 mm; 4 pcs./ 160 mm; 2 pcs./ 63 mm
Studs No. 375380 DIN 6379		4 pcs./ 80 mm	4 pcs./ 100 mm	4 pcs./ 100 mm	4 pcs./ 125 mm
Step clamp No. 372000 DIN 6314 Z		4 pcs./ 11×80	4 pcs./ 14×100	4 pcs./ 14×100	4 pcs./ 18×125
tall nuts No. 375385 DIN 6330 B		6 pcs.			
Extension nuts No. 375395		4 pcs.			
Universal serrated clamp support block No. 372200		4 pcs./ size 1; 4 pcs./ size 2; 2 pcs./ size 3	4 pcs./ size 2; 4 pcs./ size 3	4 pcs./ size 2; 4 pcs./ size 3	4 pcs./ size 2; 4 pcs./ size 3
Collared washer form G No. 375360 DIN 6319 G		6 pcs.			
Low height clamping jaws No. 375110		4 pcs./ size 12	4 pcs./ size 12	4 pcs./ size 14	4 pcs./ size 18
Spring clamp holder No. 370850		4 pcs./ size 12	4 pcs./ size 12	4 pcs./ size 14	4 pcs./ size 18
T-slot brush No. 375512		–	–	1 pc./ size 1	1 pc./ size 1

Parallel table backstops

With minus tolerance h7, compatible with machine slots with tolerance H8. Height tolerance IT5.

Material: Hardened steel.

Application:
- **As backstops in machine table slots.**
- **As parallel blocks** in clamping fixtures. For further parallel blocks see No. 366400 - 366750.



37 5500

T-slot nominal size		mm	8	12	14	16	18	22	28
35A 37 5500	Pair of parallel table backstops		XXX	XXX	XXX	XXX	XXX	XXX	(XXX)
Width tolerance h7		mm	-0.015	-0.018	-0.018	-0.018	-0.018	-0.021	-0.021
Length		mm	100	100	100	160	160	160	160
Height		mm	25	40	50	50	63	80	100
Height tolerance as pairs IT5		mm	0.009	0.011	0.011	0.011	0.013	0.013	0.015

Cover strips for T-slots

Aluminium profile strip, **1 m long.**

Application:
- Laborious cleaning of table slots is no longer necessary if empty slots are covered up with cover strips beforehand.
- Cover strips can easily be removed after machining.

Note: Can be cut to the required length using a fine saw blade.

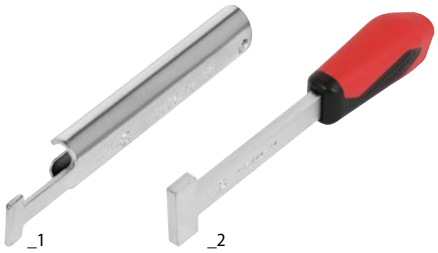
37 5508

37 5510

T-slot nominal size		mm	12	14	16	18	20	22	24	28	36
38F 37 5508	KOPAL Cover strip for T-slot **with discharge holes**		–	XXX	XXX	XXX	–	XXX	–	XXX	–
35A 37 5510	AMF Cover strip for T-slot		XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX

T-slot scraper

Sturdy steel tool for clearing T-slots.
Size 2; 3 – with 2-component handle


_1 _2

Type		1	2	3
35A 37 5512	T-slot scraper	XXX	XXX	(XXX)
for T-slot mm		14 – 20	22 – 32	36 – 54

T-slot brush

- Ergonomically shaped shock-resistant handle with guard.
- Nylon bristles.
- Laterally stabilised bristles.
- 2 in 1: Clearing hook and brush head.
- Sturdy T-slot brush made of steel, **14 mm wide.**

Type		1
310 37 5514	T-slot brush	XXX

Stops for T-slots

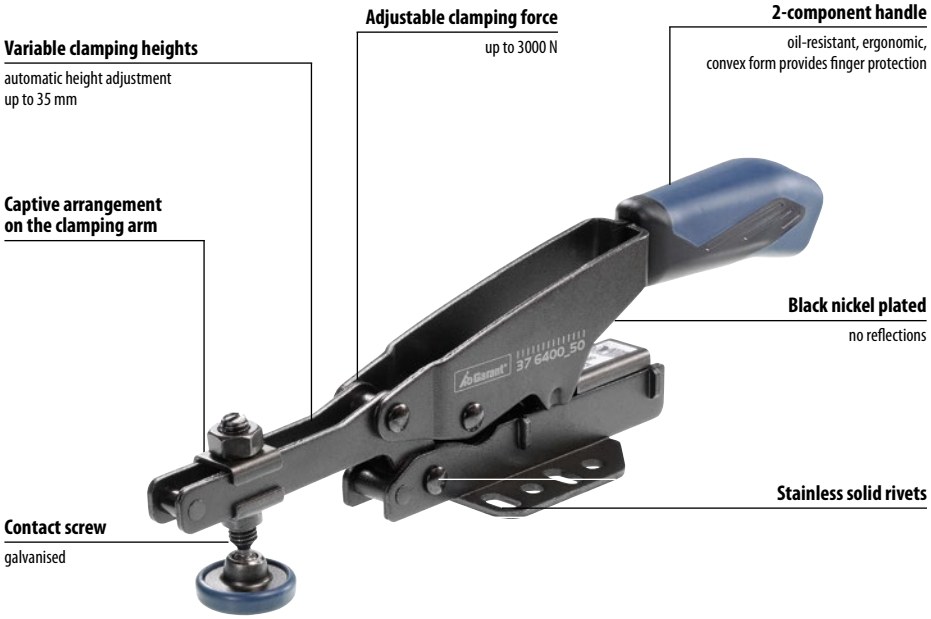
- Workpiece back-stop for clamping using eccentric bolts in T-slots.
- Sturdy version.
- Quick to fit and remove.

T-slot nominal size		mm	12	14	16	18	22
38F 37 5521	Stops for the T-slot table **(2-piece set)**		XXX	XXX	XXX	XXX	XXX
Width		mm	30	30	40	40	50
Height		mm	34	34	40	40	53

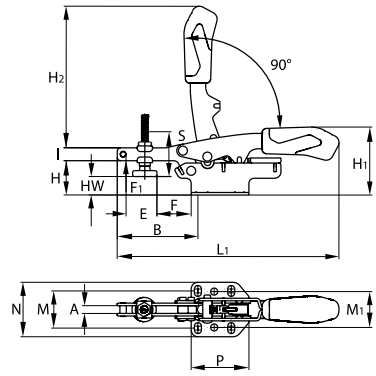
Variable toggle clamps

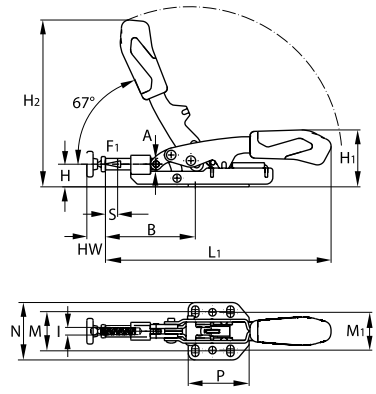
With horizontal base. Completely black nickel-plated, with solid rivets.
Ergonomic 2-component handle. Captive contact screw.
Complete with black nickel-plated contact screw.

Advantage: Stepless adjustment function for variations in workpiece heights.
Consistently high clamping forces.



Automatic height adjustment





_15; 20

_25; 50; 70

Type		20	50	70	15	25
31M 37 6400	Horizontal toggle clamp, variable	XXX	XXX	XXX	–	–
31M 37 6410	Push-pull toggle clamp, variable	–	–	–	XXX	XXX
Clamping force	N	2000	3000	3000	2000	3000
automatic height adjustment S	mm	20	35	35	8	13
maximum clamping height	mm	35	40	60	25	35
Contact screw	mm	M6×49	M8×50	M8×66	M6×37	M8×50

Size	A	B	C	C1	D	D1	H	H1	H2	HW min	HW max	I	K	L	L1	M	M1	N	P
15	8.5	50 – 59	26	–	5.5	5.5	17	58	145	13	25	M6	5.3	12.7	177	26 – 32	28	42.5	45
25	11.8	67 – 92	25.4	25.4	6.5	6.5	23	71	207	16	35	M8	6.3	12.7	256	32 – 44	38	57	63.5
20	6.0	63	26	–	5.5	5.5	27	70	121	– 7	11	10	5.3	12.7	184	26 – 32	28	42.5	45
50	8.4	104	24.5	25.4	6.5	6.5	23	72	174	– 9	1	13	6.3	12.7	261	32 – 44	38	57	63.5
70	8.4	104	25.4	25.4	6.5	6.5	41	90	174	– 6	20	13	6.3	12.7	261	32 – 44	38	57	63.5

Toggle clamps in the new range of colours

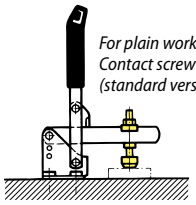
In future 80 % of all AMF toggle clamps will be available in the colours yellow, orange, blue, green and black as well as the familiar red.
All colours can be requested and ordered quickly and easily using the AMF order number.
Please note the new standard colour of orange for the following standard products.

Vertical toggle clamp with adjustable contact screw

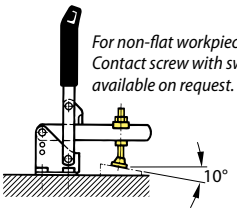
37 6510 – With vertical base for fixing to ribs and for welded structures.
37 6520 – With angled base for side attachment.
37 6500–6508 – With horizontal base for fixing to base plates etc.
37 6500/6505/6510/6520 –

- Compact design due to new handle.
- Ergonomic 2-component handle, very comfortable to use due to enlarged hand rest.
- Captive contact screw.
- Finger protection thanks to safety clamping mechanism no trap points.

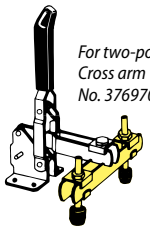
Application: **For quick clamping and releasing of parts in series production** or for installation as part of special clamping jigs. Suitable for clamping during drilling, reaming, grinding, bending, welding, fitting etc.



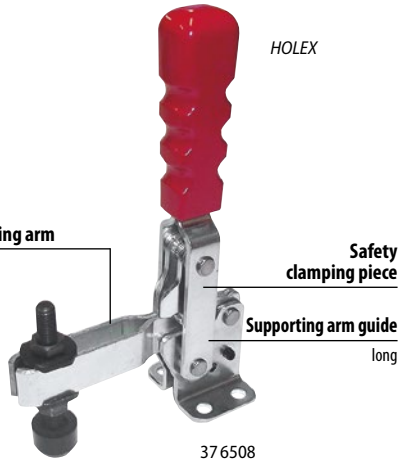
For plain workpieces: Contact screw with rubber cap (standard version).



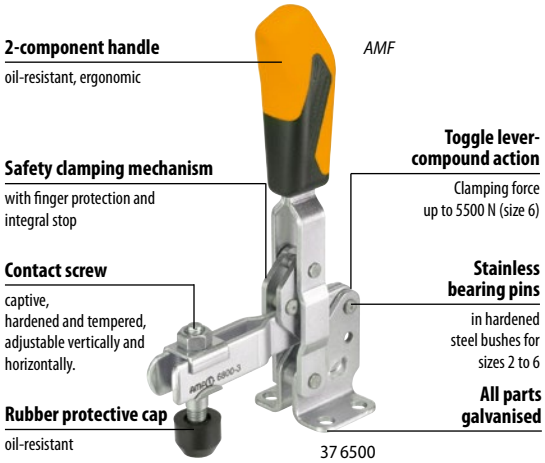
For non-flat workpieces: Contact screw with swing joint available on request.



For two-point clamping: Cross arm with 2 contact screws No. 376970



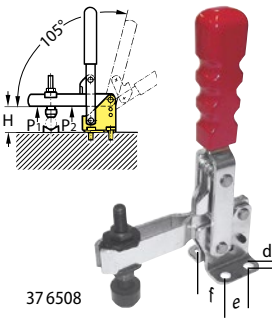
37 6508



37 6500

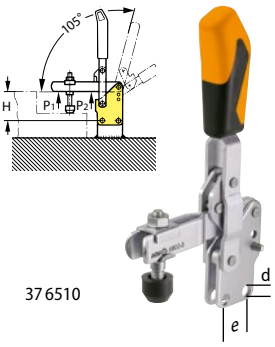
Type			0	1	2	3	4	5	6
35A 37 6500	AMF	Vertical toggle clamp **with horizontal base**	XXX	XXX	XXX	XXX	XXX	XXX	XXX
35A 37 6505	AMF	Vertical toggle clamp **with horizontal base, stainless**	–	XXX	XXX	XXX	–	–	–
32S 37 6508	HOLEX	Vertical toggle clamp **with horizontal base**	–	XXX	XXX	XXX	XXX	–	–
Hole spacing e (37 6500, 37 6505)		mm	11	16	20	20	32	45	50.5
Hole spacing e (37 6508)		mm	–	16	12.5	19	32	–	–
Hole spacing f (37 6500, 37 6505)		mm	23	24	27	32.5	45	47.5	71
Hole spacing f (37 6508)		mm	–	24	27	31.6	45	–	–
Bore ∅ d (37 6500, 37 6505)		mm	4.5	4.5	5.5	7.5	8.6	8.5	13
Bore ∅ d (37 6508)		mm	–	3	5.2	7.2	8.3	–	–
Clamping height H (37 6500, 37 6505)		mm	18	19	23	33	42.5	55.8	81
Clamping height H (37 6508)		mm	–	19	22,5	32	43	–	–
Clamping force P1 (37 6500, 37 6505)		N	500	600	800	1200	1700	3000	3400
Clamping force P1 (37 6508)		N	–	500	1200	1800	2500	–	–
Clamping force P2 (37 6500, 37 6505)		N	700	1100	1200	2500	3000	5000	5500
Clamping force P2 (37 6508)		N	–	710	1500	2500	3470	–	–
overall height (37 6500, 37 6505)		mm	81	98.5	139.5	186	221	281	333
overall height (37 6508)		mm	–	77	140	205	218	–	–
overall length (37 6500, 37 6505)		mm	49	61	78	112	141	195	231
overall length (37 6508)		mm	–	51.5	74.5	90	143	–	–
Contact screw (37 6500, 37 6505)		mm	M4×25	M5×30	M6×35	M8×45	M8×65	M12×80	M12×110
Contact screw (37 6508)		mm	–	M5×30	M6×50	M8×45	M10×89	–	–

37 6500



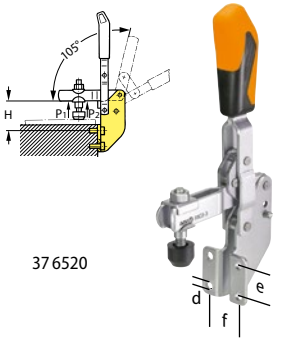
37 6508

Type		1	2	3	4	5
35A 37 6510	AMF Vertical toggle clamp **with vertical base**	XXX	XXX	XXX	XXX	XXX
Hole spacing e	mm	16	20	20	32	45
Bore ∅ d	mm	4.5	5.5	7.5	8.6	8.5
Clamping height H	mm	23.5 – 25	28,5 – 32	41	55,5	66
Clamping force P1	N	600	800	1200	1700	3000
Clamping force P2	N	1100	1200	2500	3000	5000
overall height	mm	109	144.5	200	244	301
overall length	mm	61	78	112	141	195
Contact screw	mm	M5×30	M6×35	M8×45	M8×65	M12×80



37 6510

Type		1	2	3	4
35A 37 6520	AMF Vertical toggle clamp **with angled base for side attachment**	XXX	XXX	XXX	XXX
Hole spacing e	mm	14	20	24	32
Hole spacing f	mm	20	25.5	28.5	32
Bore ∅ d	mm	4.5	6.1	6.5	8.5
Clamping height H	mm	27	35	40	60
Clamping force P1	N	800	1000	1400	2000
Clamping force P2	N	1100	1200	2500	3000
overall height	mm	125	167	223	280
overall length	mm	61	77	111	141
Contact screw	mm	M5×30	M6×35	M8×45	M8×65



37 6520

Horizontal toggle clamp

Captive contact screws.
With horizontal base for fixing to base plates etc.

37 6615 – Reinforced version with increased retaining strength

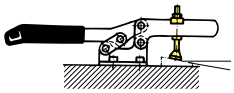
37 6617 – Can be used only in conjunction with No. 376627.

37 6610/6615/6620 – Compact design due to new handle.

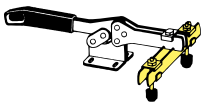
Advantage:

37 6617 – Interference contours are eliminated simply by removing the handle.

Application: **For quick clamping and releasing of parts in series production** or for installation as part of special clamping jigs. Suitable for clamping during drilling, reaming, grinding, bending, welding, fitting etc.

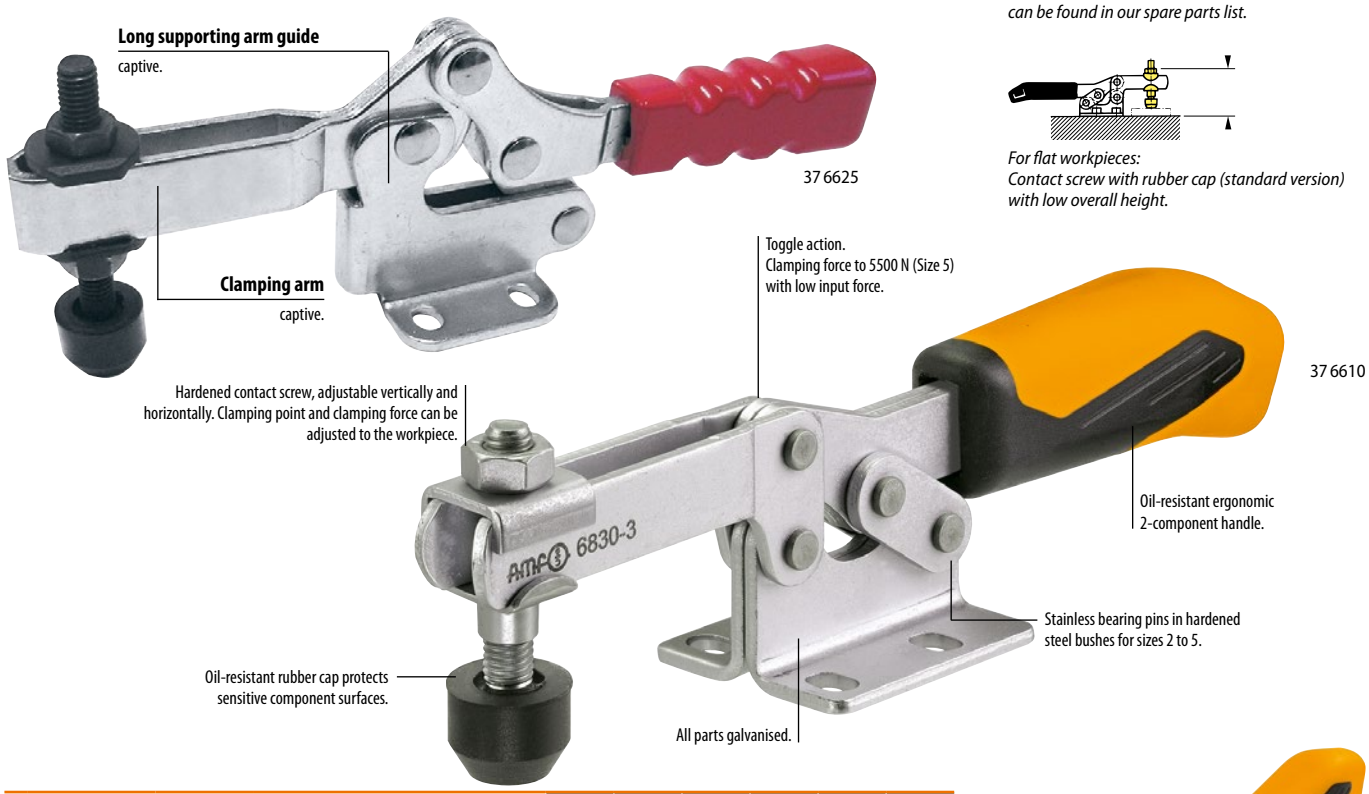


For uneven components:
contact screw with joint, on request.



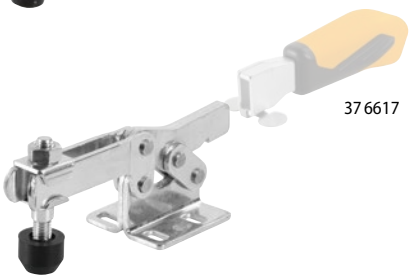
For two-point clamping:
Cross arm with 2 contact screws No. 376970 can be found in our spare parts list.

For flat workpieces:
Contact screw with rubber cap (standard version) with low overall height.

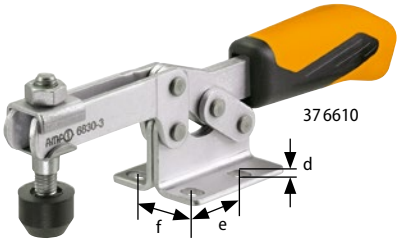


Type			0	1	2	3	4	5
35A 37 6610		Horizontal toggle clamp **with horizontal base**	XXX	XXX	XXX	XXX	XXX	XXX
35A 37 6615		Horizontal toggle clamp **plus, with horizontal base**	–	–	XXX	XXX	XXX	–
35A 37 6617	AMF	Horizontal toggle clamp **for removable handle, with horizontal base**	–	–	XXX	XXX	XXX	–
35A 37 6620		Horizontal toggle clamp **with horizontal base, stainless**	XXX	XXX	XXX	XXX	–	–
32S 37 6625	HOLEX	Horizontal toggle clamp **with horizontal base**	XXX	XXX	XXX	XXX	XXX	–
Hole spacing e (37 6610, 37 6615, 37 6617, 37 6620)		mm	13.6	13.7	26	25.7	41	41.5
Hole spacing e (37 6625)		mm	11.2	13.5	26	26	41.2	–
Hole spacing f (37 6610, 37 6615, 37 6617, 37 6620)		mm	16	19.7	24.5	25	36	41.5
Hole spacing f (37 6625)		mm	16	16.8	25	31.6	43	–
Bore ∅ d (37 6610, 37 6615, 37 6617, 37 6620)		mm	4.6	5.2	5.6	6.5	8.5	8.5
Bore ∅ d (37 6625)		mm	4.3	5.2	5.5	6.6	8.8	–
Clamping height H (37 6610, 37 6617, 37 6620)		mm	14.5	19	24	32	45	46
Clamping height H (37 6615)		mm	–	–	28	33.5	41	–
Clamping height H (37 6625)		mm	8	18	24	33	45	–
Clamping force P1 (37 6610, 37 6617, 37 6620)		N	250	800	1000	1800	2000	3000
Clamping force P1 (37 6615)		N	–	–	1600	2500	3500	–
Clamping force P1 (37 6625)		N	230	460	1200	1650	2500	–
Clamping force P2 (37 6610, 37 6617, 37 6620)		N	400	1100	1200	2500	3000	5000
Clamping force P2 (37 6615)		N	–	–	3000	4000	8000	–
Clamping force P2 (37 6625)		N	380	700	1400	2300	3500	–
overall height (37 6610, 37 6617, 37 6620)		mm	23	30	45	48.5	75	73
overall height (37 6615)		mm	–	–	51	58	77	–
overall height (37 6625)		mm	17	38	54	68.5	90	–
overall length (37 6610, 37 6620)		mm	79	120	162	206	287	321
overall length (37 6615)		mm	–	–	224	242	329	–
overall length (37 6617)		mm	–	–	113	134	191	–
overall length (37 6625)		mm	77	105	163	190	273	–
Contact screw (37 6610, 37 6617, 37 6620)		mm	M4×25	M5×30	M6×35	M8×45	M8×65	M8×65
Contact screw (37 6615)		mm	–	–	M6×50	M8×58	M10×76	–
Contact screw (37 6625)		mm	M4×20	M5×30	M6×40	M8×50	M10×90	–

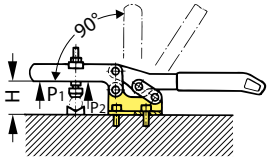
37 6615



37 6617



37 6610



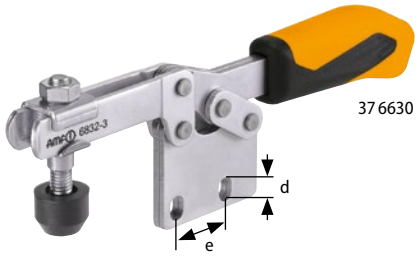
Captive contact screws.

- Compact design due to new handle.
- Ergonomic 2-component handle, very comfortable to use due to enlarged hand rest.

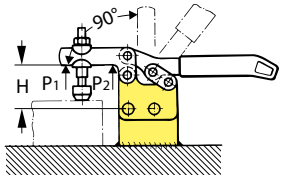
37 6630 – With vertical base for fixing to ribs and for welded structures.

37 6640 – With angled base for side attachment.

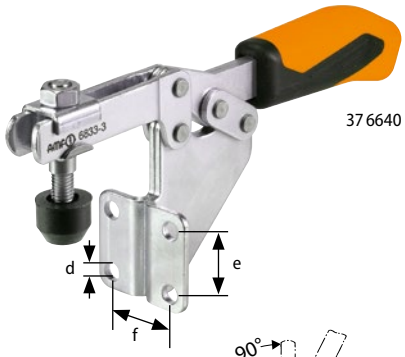
Application: **For quick clamping and releasing of parts in series production** or for installation as part of special clamping jigs. Suitable for clamping during drilling, reaming, grinding, bending, welding, fitting etc.



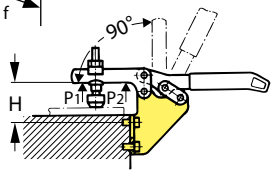
37 6630



Type		0	1	2	3	4
35A 37 6630	Horizontal toggle clamp **with vertical base**	XXX	XXX	XXX	XXX	XXX
Hole spacing e	mm	13.5	14	26	25.7	41
Bore ∅ d	mm	4.6	5.2	5.6	6.5	8.5
Clamping height H	mm	20	25.5	34	42.5	59
Clamping force P1	N	250	800	1000	1800	2000
Clamping force P2	N	400	1100	1200	2500	3000
overall height	mm	33	43	61	65	97
overall length	mm	79	120	164	206	287
Contact screw	mm	M4×25	M5×30	M6×35	M8×45	M8×65



37 6640

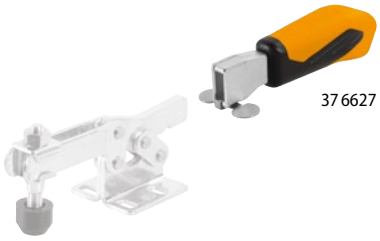


Type		2	3	4
35A 37 6640	Horizontal toggle clamp **with angled base**	XXX	XXX	XXX
Hole spacing e	mm	20	24	32
Hole spacing f	mm	25.5	28.5	32
Bore ∅ d	mm	5.6	6.8	8.5
Clamping height H	mm	48	40	60
Clamping force P1	N	1000	1800	2000
Clamping force P2	N	1200	2500	3000
overall height	mm	94	86.5	133
overall length	mm	162	206	282
Contact screw	mm	M6×35	M8×45	M8×65

Handle

Ergonomic 2-component handle.

Suitable for: No. 376617



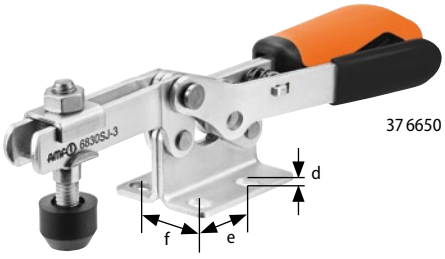
37 6627

Type		2	3	4
35A 37 6627	Handle **removable**	XXX	XXX	XXX
overall length	mm	93	118.5	134.5
overall height	mm	26	35	42
overall width	mm	21	27	34.5

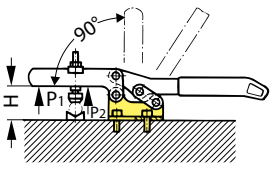
Horizontal toggle clamp with patented safety-locking mechanism

- Rivet made of stainless steel.
- Case-hardened bearing bushes.
- Bearings greased.
- Complete with hardened and galvanised contact screw.
- More compact design due to new handle.
- Ergonomic 2-component handle, very comfortable to use due to enlarged hand rest.
- Captive contact screws.

Application: Particularly suitable for use where vibrations occur and for overhead applications due to patented safety-locking in closed and open state.



37 6650



Type		3	4
35A 37 6650	Horizontal toggle clamp **with safety-locking mechanism**	XXX	XXX
Hole spacing e	mm	25.7	41
Hole spacing f	mm	26.9	36
Bore ∅ d	mm	6.5	8.5
Clamping height H	mm	32	45
Clamping force P1	N	1800	2000
Clamping force P2	N	2500	3000
overall height	mm	48.5	75
overall length	mm	206	287
Contact screw	mm	M8×45	M8×65

Push-pull toggle clamp short type

Hardened shoulder screws.

37 6700 – ■ Compact design due to new handle.
■ Ergonomic 2-component handle, very comfortable to use due to enlarged hand rest.
37 6725 – ■ Ergonomic handle made of oil-resistant plastic.

Application: ■ Direct fixing to sheet metal fixing points.
■ Connected to jig body with threaded end of arm.

Optional extras:

37 6700 – Angled base No. 376730.
37 6725 – Angled base No. 376735.

Note: ■ Available in stainless steel on request.

37 6700

37 6725

Type		2	3	5
35A 37 6700	Push-pull toggle clamp **short body**	XXX	XXX	XXX
32S 37 6725	HOLEX	XXX	XXX	–
Clamping range (37 6700) mm		21.5	40	67
Clamping range (37 6725) mm		19	38	–
Clamping force P (pressure and traction) (37 6700) N		1000	2500	4000
Clamping force P (pressure and traction) (37 6725) N		900	1300	–
Overall height H (37 6700) mm		73	123	149
Overall height H (37 6725) mm		74	100	–
Overall length L (37 6700) mm		161.5	258	364
Overall length L (37 6725) mm		163	237	–
Contact screw (37 6700) mm		M6×25	M8×35	M12×50
Contact screw (37 6725) mm		M6×40	M8×50	–
thread at front of clamp mm		M16×1.5	M20×1.5	M24×1,5

Hook toggle clamp – heavy-duty version

Base, lever arm, and catch of cast steel, pin of hardened steel. For high retaining force.

37 6840

Type		4	5
35A 37 6840	Hook toggle clamp **heavy-duty**	XXX	(XXX)
Hole spacing e mm		45	57
Hole spacing f mm		45	57
Bore ∅ d mm		8.5	10.5
Adjustment travel of clamping hook c mm		24 – 90	28 – 93
Clamping height h mm		26	32
Clamping force P (traction) N		15000	27000
Overall height H mm		122	146
Overall length L mm		198	250

Contact screws with thread

■ Hardened, galvanised, passivated, strength 8.8.
■ Vulcanised, oil-resistant contact head (silicone-free).

Application: To protect delicate components.

37 7050

Type		4×25	5×30	6×25	6×35	8×35	8×45	8×50	8×65	12×50	12×80	12×110
35A 37 7050	Contact screw **with threaded shank**	XXX	XXX	XXX	XXX	XXX	(XXX)	XXX	XXX	XXX	XXX	XXX
∅ mm		11	13	16	16	21	21	21	21	31	31	31
Height of contact piece mm		8	10	12	12	16	16	16	16	24	24	24
Contact screw size mm		M4×24	M5×28	M6×23	M6×33	M8×32	M8×42	M8×47	M8×62	M12×46	M12×76	M12×106
Overall length mm		32	38	35	45	48	58	63	78	70	100	130

Protective caps for contact screws

Oil-resistant rubber.

Application: To protect delicate components.

Note: ■ 6/18 = 18 AF **(new standard** = marked 6 on the contact surface).
■ 6/19 = 19 AF **(old standard).**
■ Minimum order quantity each size 10 pieces.

37 7020

Type		0	1	2	3/4	4	6/18	6/19
35A 37 7020	Protective cap	XXX	XXX	XXX	XXX	XXX	XXX	XXX
for screws		M4	M5	M6	M8	M10	M12 / 18 AF	M12 / 19 AF
∅ mm		11	12.5	15	19	22	25	26
Height mm		8.5	10	12	15	17.5	20	20

Push-pull toggle clamp (push and pull back clamps)

With **compound action.** Opening prevented by self-locking mechanism.

- Rivet made of stainless steel, bearings greased.
- With long push-pull guide.
- Handle can be moved to any angle.

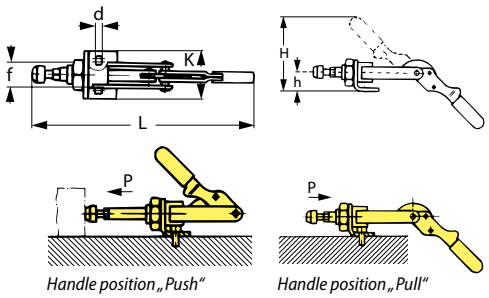
37 6710 –
- With hardened and galvanised contact screw.
- Detachable angled base, permitting fixing to sheet metal walls.

Application: For use in special clamping fixtures for drilling, reaming, grinding, bending, welding, fitting etc.

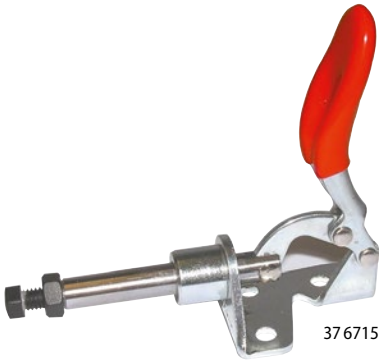
Optional extras:

37 6710 – Angled base No. 376730.

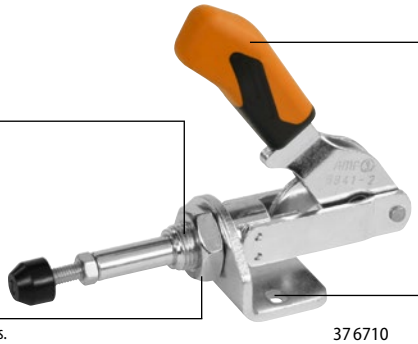
Note: ■ Size 0 and 3 also available in stainless steel!



Handle position „Push" *Handle position „Pull"*



37 6715



37 6710

Type		0	1	2	3	5
35A **37 6710**	Push-pull toggle clamp **with angled base**	XXX	XXX	XXX	XXX	XXX
32S **37 6715**	Push-pull toggle clamp **with baseplate**	XXX	–	–	–	–
Hole spacing e (37 6715)	mm	15.9	–	–	–	–
Hole spacing f (37 6710)	mm	16	16 – 19.5	31.8 – 36	29.5 – 42.5	29 – 46
Hole spacing f (37 6715)	mm	15.9	–	–	–	–
Angled base width K (37 6710)	mm	25	30	50	60	65
Angled base width K (37 6715)	mm	27	–	–	–	–
Clamping height b to centre of screw (37 6710)	mm	12	15	20	25	30
Clamping height b to centre of screw (37 6715)	mm	12.7	–	–	–	–
Bore ∅ d (37 6710)	mm	4.5	4.5	5.6	6.5	8.5
Bore ∅ d (37 6715)	mm	4.4	–	–	–	–
Clamping range	mm	16	20	26	32	40
Clamping force P (pressure and traction) (37 6710)	N	800	1000	2000	2500	4500
Clamping force P (pressure and traction) (37 6715)	N	450	–	–	–	–
Overall height H (37 6710)	mm	49.3	60.5	85.5	108	129.5
Overall height H (37 6715)	mm	38	–	–	–	–
Overall length L	mm	140.5	185	244	302.5	379.5
Contact screw	mm	M4×20	M4×20	M6×25	M8×35	M12×50
thread at front of clamp (37 6710)	mm	M10x1	M12×1,5	M16×1.5	M20×1.5	M24×1,5

Heavy-duty push-pull toggle clamps (push and pull back clamps)

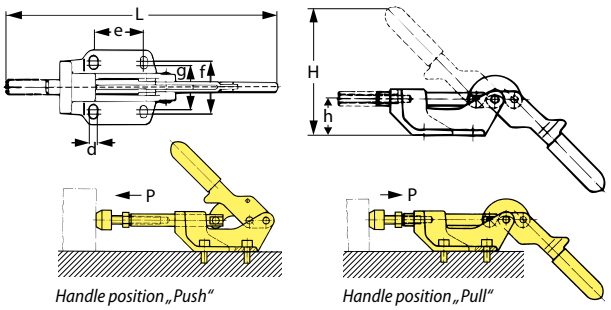
- Very sturdy design, with slide-ram guide.
- Slide-ram and hand lever move together.
- Body of malleable cast iron.
- Lever parts and slide ram made of quenched and tempered steel, galvanised and passivated.
- Hardened contact screw.

Application:
- For quick clamping / releasing in series production.
- As push or pull clamp.
- For incorporation within special jigs and fixtures.
- Suitable for clamping during drilling, reaming, grinding, bending, welding, fitting etc.

37 6720

Heavy push-pull toggle clamps

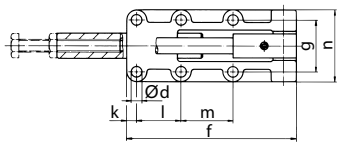
Type		3	5	7
35A **37 6720**	Heavy push-pull toggle clamp	XXX	XXX	XXX
Hole spacing g	mm	36	41	57
Hole spacing e	mm	41	41	70
Hole spacing f	mm	44	50	65
Clamping height b to centre of screw	mm	30	38	55
Bore ∅ d	mm	6.5	8.5	11
Clamping range	mm	32	40	50
Clamping force P (pressure and traction)	N	4000	10000	25000
Overall height H	mm	116	137.5	179
Overall length L	mm	309	380	460
Contact screw	mm	M8×35	M12×50	M12×50



Handle position „Push" *Handle position „Pull"*

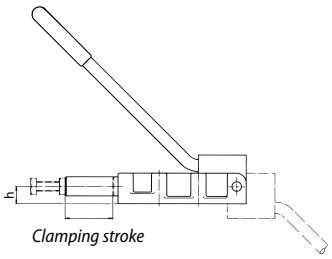
Push-pull toggle clamp – with removable hand lever

- Hardened bolts, maintenance-free sintered bushes.
- For high clamping forces.
- Body of malleable cast iron, burnished.



37 6760

Type			4	5	7	8
35A 37 6760	Push-pull toggle clamp **with hand lever (can be pulled-out)**		XXX	XXX	XXX	XXX
Hole spacing k		mm	25	8	12	14.5
Hole spacing l		mm	36.5	35	45	70
Hole spacing m		mm	–	41	45	70
Hole spacing g		mm	33.3	41	54	57
Base body width n		mm	47	58	84	86
Base body length f		mm	90	137	198	254
Clamping height b to centre of screw		mm	12	18	22	28
Bore ∅ d		mm	5.5	8.5	10.5	10.5
Clamping range		mm	32	50	75	106
Clamping force P (pressure and traction)		N	7000	12000	25000	45000
Overall height H		mm	132	210	285	360
Overall length L		mm	155	250	355	440
Contact screw		mm	M8×35	M10×50	M12×50	M16×80
Weight		kg	0.65	1.65	4.28	7.72



Clamping stroke

Hook toggle clamp (pull back clamps)

37 6740 –
- Quick-action clamp with toggle action.
- Self-locking mechanism prevents inadvertent opening.

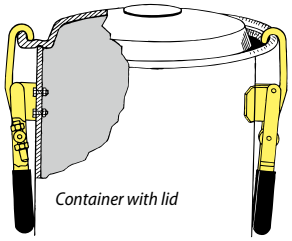
Application:

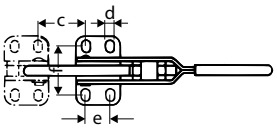
37 6740 – For closing containers.

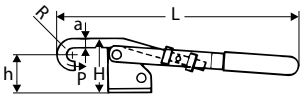
37 6740

Clamping hook axial adjustment.

37 6750
Catch


Container with lid





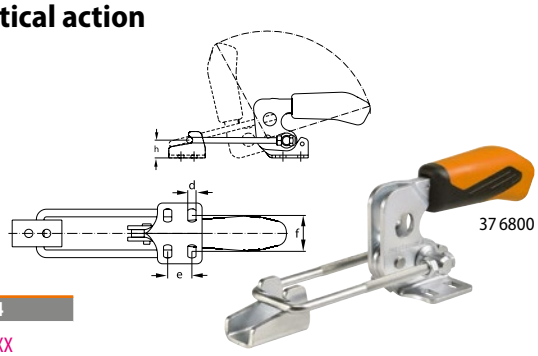
Type			1	3	5
35A 37 6740	Hook toggle clamp **with clamping hook**		XXX	XXX	XXX
35A 37 6750	Catch for No. 376740		XXX	XXX	XXX
Hole spacing e		mm	19	19	29
Hole spacing f		mm	26 – 30	31.5 – 35.5	55.5 – 63
Bore ∅ d		mm	5.4	5.5	11.2
Adjustment travel of clamping hook c		mm	35 – 42	72 – 84	58 – 73
Clamping height h (37 6740)		mm	22.7	22.7	49
Clamping force P (traction)		N	2000	3000	5000
Overall height H		mm	34.5	36	69
Overall length L (37 6740)		mm	104.6	200.5	260.5
Radius R (37 6740)		mm	4.5	5.5	8
Thickness a (37 6740)		mm	5.3	7.1	10.75
Overall length L (37 6750)		mm	31	40	55
overall width (37 6750)		mm	40	45	85

Hook toggle clamp (pull back clamp) – horizontal / vertical action

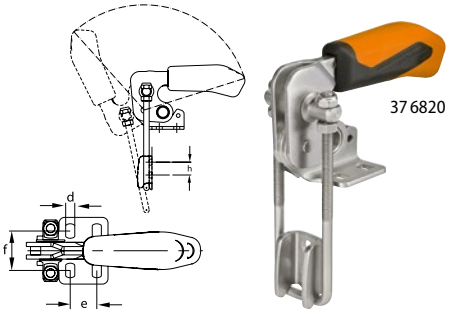
Complete with catch.

- **Quick-action clamp with toggle action.**
- **Self-locking mechanism prevents inadvertent opening.**

Application: For closing containers.



37 6800



37 6820

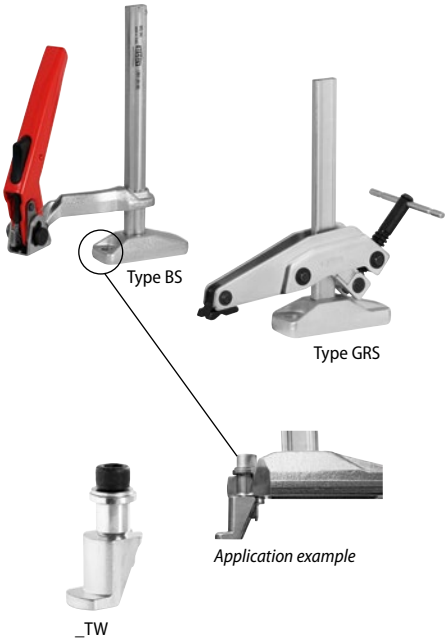
Type			2	3	4
35A 37 6800	Hook toggle clamp **horizontal**		XXX	XXX	XXX
35A 37 6820	Hook toggle clamp **vertical**		XXX	XXX	XXX
Hole spacing e		mm	13	19	32
Hole spacing f		mm	19.5 – 23.5	24.5 – 32	35 – 46
Bore ∅ d		mm	5.2	6.5	8.5
Adjustment travel of clamping hook c (37 6800)		mm	38 – 72	48.6 – 96	59 – 123
Adjustment travel of clamping hook c (37 6820)		mm	5 – 30	7 – 36	9 – 47
Clamping height h		mm	12	19	26
Clamping force P (traction)		N	1600	3200	7000
Overall height H		mm	47	70	94.5
Overall length L (37 6800)		mm	125 – 159	169 – 216	209 – 273
Overall length L (37 6820)		mm	91	125	151

Quick-action table clamp

Steplessly variable, fixed or pivoted. Type BS – the clamping action is released by tightening the clamping handle further then pressing the release lever (clamp then releases easily). Type GRS – the spindle is located away from the head, allowing free access to the work area.

Application: For use on machine tables for fast and reliable clamping and releasing when manufacturing individual parts.

Optional extras: Socket-head screw to DIN 912, T-nuts No. 375315 / 5320 / 5325 to DIN 508.



Type		BS2N	BS3N	BS5N	GRS20-12
37B 37 7065	Quick-action table clamp	XXX	XXX	XXX	XXX
Throat	mm	100	120	140	123-140
Clamping height h	mm	200	200	240	200
maximum clamping force at 50mm clamping height	kN	3.5	5.5	10	7.5
Height H	mm	260	260	320	322
Attachment hole ∅	mm	10.5	13	16.5	16.5

Accessories for machine table: quick-release clamp for welding table

Application: It can be used on welding tables by simply screwing it to the quick-action table clamp No. 377065.

Type		TW
37B 37 7067	Attachment	XXX
Hole ∅	mm	28

Clamping element for welding table

37 7152 – Lever handle with locking mechanism for proportionate and vibration-proof clamping.
37 7150 Size 28/160 – Applicable only in conjunction with No. 377165.

Advantage:
- Can be incorporated in to the welding table without using tools.
- Wide variety of uses, and steplessly adjustable.
- Convenient, secure, pin-point individual clamping.

37 7150_16/100

37 7150_28/160

Type		16/100	28/120	28/140	16/150	28/175	28/160
37B 37 7150	Clamping element **2-component handle**	XXX	XXX	XXX	XXX	XXX	XXX
37B 37 7151	Clamping element **Knob handle**	(XXX)	(XXX)	(XXX)	XXX	XXX	–
37B 37 7152	Clamping element **Lever handle**	XXX	(XXX)	(XXX)	XXX	XXX	–
Hole ∅	mm	16	28	28	16	28	28
Version		rigid	rigid	rigid	variable	variable	can be tilted
Clamping height max.	mm	200	300	300	200	300	–
Throat	mm	100	120	140	30–150	40–175	0-160

37 7151_16/100

37 7151_16/150

37 7152_16/100

Accessories for table clamping elements

Round material can be steplessly lowered into the table, using the positioning ring.

Suitable for: No. 377150 size 28/160 and No. 377160 size VAD.

Type		TWX
37B 37 7165	Extension	XXX
Hole ∅	mm	28

Size VAD – without pin, for movement on the welding table.
Size 16VAD; 28VAD – without pin, for insertion on to the welding table.

Application:
- Suitable for round, oval and angular workpieces.
- Stepless angular adjustment from 60° acute to 60° oblique.

37 7165_TWX

Type		16VAD	28VAD	VAD
37B 37 7160	Table clamping set **(set 2 pieces)**	XXX	XXX	(XXX)
Hole ∅	mm	16	28	–
Clamping face width	mm		45	

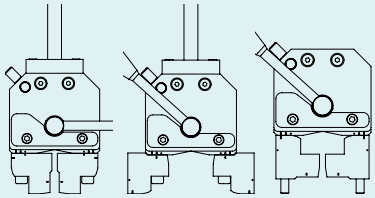
37 7160_28VAD

37 7160_VAD

Garant New development for your safety

High quality workmanship in timeless GARANT design, in conjunction with well thought-out features to satisfy user requirements and safety requirements – the new GARANT LM1 lifting magnet.

- Certified break-away force guarantees **3-fold safety** for the user.
- Rotating lifting eye can also be mounted on the side for lifting vertical loads by means of optional pole pieces.
- Soft Opening Protection prevents the **operating handle jumping back**.



Option 1 *Option 2* *Option 3*

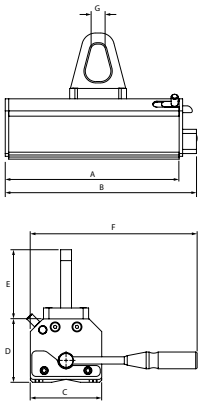
Garant LM1 lifting magnet

- Rotating lifting eye, operating lever and side closure cover of **non-rusting stainless steel**.
- A **safety locking bar** prevents accidental release of the operating lever when in use.
- Pole area for optional fitting of pole pieces.

Optional extras:

Size 300; 600 – Pole piece pair No. 382025.

Note: Air gap < 0.1 mm for sheet material!
Switch on the load lifting magnet only on magnetic surfaces!
The geometry of the workpiece to be lifted should be chosen to suit the safety concept.



38 2020_300

maximum loading capacity (level)	310 38 2020 LM1 lifting magnet	maximum ∅ round	maximum length flat	maximum width, flat	minimum material wall thickness, flat	minimum material wall thickness, round	A	B	C	D	E	F	G	maximum lifting capacity flat	maximum lifting capacity round	Weight
kg		mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	kg	kg	kg
150	XXX	250	1250	600	15	10	115	140	68	70	60	170	17	150	75	4.5
300	XXX	300	2000	1000	25	20	161	191	98	87	95	231	21	300	150	10.5
600	XXX	300	2250	1500	30	25	246	276	98	87	95	231	21	600	300	16.5
1000	XXX	750	3000	1500	40	40	285	320	140	109	140	346	34	1000	500	34.3

Pole pieces — pair

Application: For mounting on the pole face of the load lifter.
This allows workpieces of different diameters to be lifted.
Optimised accessibility for individual lifting situations.

Supplied with: Supplied with fastening screws and attachment pins for transporting vertical loads.

Note: The maximum safe working load varies according to the option selected.

38 2025_300

Type	310 38 2025 Pole shoe pair	Version: Option 1 workpiece ∅	Option 2 workpiece ∅	Option 3 max. vertical load
300	XXX	40 – 300 mm	158 – 500 mm	160 kg
600	XXX	40 – 300 mm	158 – 500 mm	400 kg

TECNOMAGNETE MaxX lifting magnet

Application: Quick and easy handling and transport of flat and round materials with 3-fold safety.

Note: For the product dimensions, see the eShop.
Size 125 – With rotating lifting eye.

38 2001_2000

maximum loading capacity (level)	38D 38 2001 MaxX lifting magnet	maximum ∅ round	maximum length flat	minimum material wall thickness, flat	minimum material wall thickness, round	maximum lifting capacity flat	maximum lifting capacity round	Weight
kg		mm	mm	mm	mm	kg	kg	kg
125	XXX	300	1000	20	10	125	50	3.5
250	XXX	300	1500	20	10	250	100	6
500	XXX	400	2000	25	15	500	200	15
1000	XXX	450	3000	40	25	1000	400	36
1500	XXX	500	3000	45	30	1500	600	66
2000	XXX	600	3000	55	35	2000	800	80

Electro permanent magnet clamping plates

- Innovative and patented monoblock design for maximum stiffness and reliability.
- **Quick attachment of the electrical connections.**

38 2000 –
- Threaded sockets of high-tensile material in each pole.
- Sturdy due to monoblock design and use of integral pole plates.

Advantage:
- Vibration-free machining protects the tool and the machine.
- Five-axis machining without interference contours.
- Full exploitation of the machine travel.
- Significant reduction in set-up times.
- Unaffected by power failures.
- Quick and precise plane-parallel milling.
- Uniform clamping force over the entire clamping area.
- Low installed height
- Very high holding forces
- Quick and easy positioning of workpieces.

38 3050 –
- Patented "All Steel" surface in monolithic technology.
- Solid block structure with no individual mechanical components (gives greater stability and strength).
- Completely enclosed single-component surface (no liquids can penetrate).
- Lightweight.

Application: For use in mould-making, tool-making and machine tool building.

Supplied with: Including controller XT200 for controlling a magnetic clamping plate.

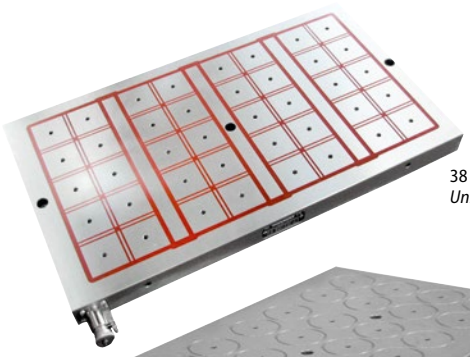
38 2000 Size 406UP-MAXX – Supplied with lifting magnet Maxx 250.

Optional extras:

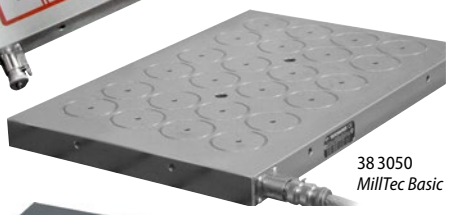
38 2000 – Pole extension No. 382010.

38 3050 – Pole extension No. 383510.

Note: **Installation package for actuating multiple electro-permanent magnetic clamping plates available on request!**
The power cable is supplied without any connection plug.
Mains connection 400 V / 50 Hz.



38 2000
UniPower

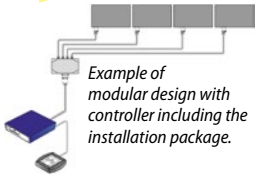


38 3050
MillTec Basic

All sizes including controls 400V / 50Hz

maximum safe working load (flat) 250 kg

Size 406UP-MaxX including MaxX 250 lifting magnet



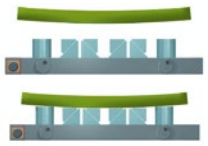
Example of modular design with controller including the installation package.

Type		406UP	406UP-MAXX	408UP	508UP	406MTB	408MTB	508MTB
38D 38 2000	Electro permanent magnet clamping plate **UniPower**	XXX	XXX	(XXX)	XXX	–	–	–
38D 38 3050	Electro permanent magnet clamping plate **MillTec Basic**	–	–	–	–	XXX	(XXX)	(XXX)
Length	mm	600	600	790	790	600	800	800
Width	mm	400	400	400	480	405	405	485
Height	mm				51			
Number of poles		24	24	32	40	24	32	40
Pole pitch	mm	62	62	62	62	70	70	70
Weight	kg	90	90	115	150	75	95	115
maximum clamping force	kN	145	145	193	241	150	200	250

Accessories for electro permanent magnet clamping plates

Suitable for: No. 382000

Advantage:
- Quick and reliable clamping of uneven parts.
- Even clamping force over the entire face, without distorting the workpiece.
- Clamping of distorted fabrications in a very short time.
- Holes can be bored through the entire workpiece without damaging the magnetic plate.



Automatic adaptation to the workpiece.

Type		PFR	PMQ
38D 38 2010	Pole extensions for the UniPower electro-permanent magnetic clamping plate	XXX	XXX
∅	mm	60	–
Length	mm	–	60
Width	mm	–	60
Height	mm	41	
Version		fixed	movable

38 2010_PFR

38 2010_PMQ

Suitable for: No. 383050

Advantage:
- 20 % better magnetic power than conventional pole extensions.
- Integral threaded stud permits quick and easy positioning.
- Encapsulated design prevents ingress of chips.

Type		PFR	RMP
38D 38 3510	Pole extensions for the MillTec Basic electro-permanent magnetic clamping plate	XXX	XXX
∅	mm	70	76
Height	mm	45	
Version		fixed	movable

38 3510_PFR

38 3510_RMP

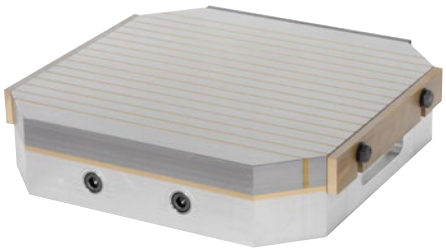
Garant Permanent magnet plate

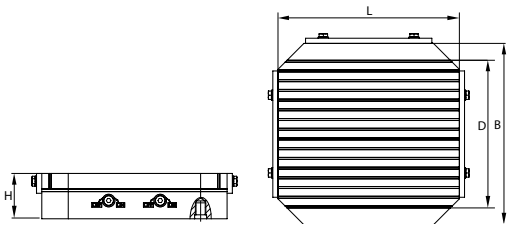
- Alu casing for mounting on top or for incorporation.
- Stop strips on 3 sides.
- 2 switch points.
- Milled-in grip handle.
- 4 ZeroClamp holes provided at 200 pitch.
- Lamellae made of 3 mm brass / 12 mm steel.

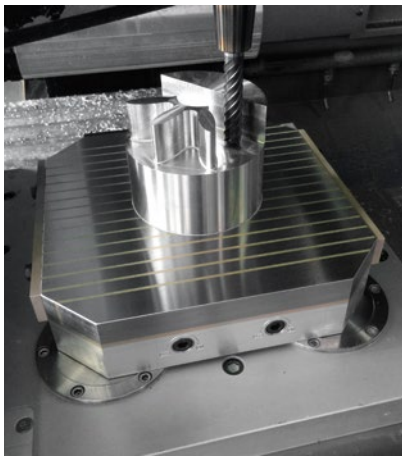
Application: For clamping medium-sized to large workpieces for grinding, milling and spark erosion.

Supplied with: Hexagon socket.

Note: Suitable GARANT ZeroClamp clamping stud 360025 18M16 or 18M16/138.







Length L	mm	280	320
310 38 0040	Permanent magnet, transverse pole distribution	XXX	XXX
Width B	mm	280	320
Height H	mm	68.5	
D	mm	220	258
Magnetic field height	mm	6	
Grinding allowance in pole area	mm	6	
Weight	kg	29	38
Nominal clamping force	N/cm²	130	

SAV Permanent magnetic clamping plate with neodymium magnets

- **Neodymium magnet system for strong clamping force.**
- ON-OFF control by hand-operated lever.
- In the OFF state a weak opposing field **assists removal** of the components.
- With longitudinal and transverse stops.
- Lamellae made of 3 mm brass / 12 mm steel.
- Magnetic field without straying, ensuring no magnetisation of tools.

Application:
- **Suitable for heavy machining** such as roughing.
- For small, medium, and large components even with rough or uneven surfaces.

Pole area length	mm	250	350	400	500	600
335 38 0100	Permanent magnetic clamping plate, transverse pole distribution	XXX	XXX	XXX	XXX	(XXX)
Width	mm	150	150	200	200	200
Height	mm	56	56	56	59	59
Height tolerance	mm	+0.5 / -2				
Magnetic field height	mm	12				
Grinding allowance in pole area	mm	5				
Weight	kg	17	24	35	44	52
Nominal clamping force	N/cm²	150				

- **Neodymium magnet system for strong clamping force.**
- Through transverse pole distribution.
- Uniform clamping force over entire width **and side faces of the pole area.**
- Lamellae made of 0.5 mm brass / 1.4 mm steel.

Application:
- For grinding and spark erosion machines.
- **Universal clamping of small and medium-sized components of any thickness.** (Particularly suitable for thin components).
- Consistent clamping force over entire width **and side faces** guaranteed.

Pole area length	mm	175	255	300	350	450	600
335 38 0500	Permanent magnetic clamping plate, fine pole distribution	XXX	XXX	XXX	XXX	XXX	(XXX)
Width	mm	100	130	150	150	150	200
Height	mm	49	49	51	51	51	51
Height tolerance	mm	+0.5 / -2					
Magnetic field height	mm	6					
Grinding allowance in pole area	mm	8					
Weight	kg	7	14.5	19.7	23	30	52.4
Nominal clamping force	N/cm²	80					

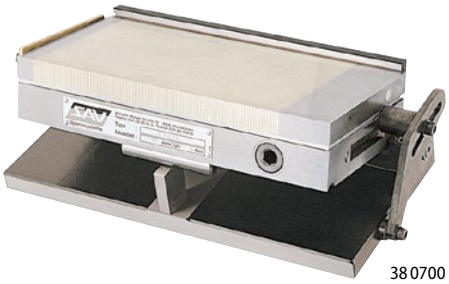
SAV Sine tables with permanent magnetic clamping plate

- **Neodymium magnet system for strong clamping force.**
- With permanent magnetic clamping plate No. 380500.
- Tilting about the longitudinal axis.
- Tilt range 0 – 45°. Angular accuracy ±5 s. Baseplate thickness at 0° = 3 mm. Plane parallelism ±0.005 / 100 mm.
- Pole pitch 0.5 mm brass / 1.4 mm steel.
- Very high precision combined with extremely low height.

Application: For grinding and spark erosion machines.

Supplied with: Wooden box and sine conversion table from degrees / minutes to mm.

Pole area length		mm	175	255	350
33S 38 0700	Sine table with permanent magnetic clamping plate		XXX	XXX	XXX
Width		mm	100	130	150
Footprint width		mm	115	145	165
Footprint length		mm	215	295	390
Height at 0°		mm	77	77	87
Height tolerance		mm		0 / -2	
Magnetic field height		mm		6	
Grinding allowance in pole area		mm		8	
Weight		kg	10	19	35
Nominal clamping force		N/cm²		80	



38 0700

SAV Round permanent magnetic chucks

Powerful magnetic system with **neodymium** magnets and low magnetic field height. **Continuously adjustable** magnetic force.

Application: For grinding and turning.

38 0776 – For clamping small and thin to medium workpieces.

38 0777 – For clamping small and thin to large workpieces.

Note: The centre can be bored out to size "J".

Chuck ∅		mm	100	130	150	200	250	300	350
33S 38 0776	Permanent magnetic chuck, with parallel pole distribution		XXX	XXX	XXX	XXX	XXX	XXX	(XXX)
Height		mm	50	50	50	57	57	62	62
Height tolerance		mm	0 / -1	0/-1	0 / -1	0 / -1	0 / -1	0 / -1	0 / -1
Pitch circle ∅		mm	85	115	132	154	192	227	293
Thread ∅						4×M8			
Magnetic field height		mm				8			
Weight		kg	3	5	7	15	20	31	43.8
Nominal clamping force		N/cm²	70	100	100	100	100	100	100
Grinding allowance in pole area		mm				5			
Centre ∅		mm	60	90	110	150	250	250	300
Centring hole depth		mm	4	4	4	4	4	4	5
Parallel pole distribution		mm				1.9			
possible to bore out to centre hole "J"		mm	20×14	20×14	24×5	200×5	250×5	300×5	350×5

38 0776

Chuck ∅		mm	160	200	250	300	350
33S 38 0777	Permanent magnetic chuck, with parallel pole distribution		XXX	XXX	XXX	XXX	(XXX)
Height		mm	57	57	57	62	62
Height tolerance		mm			0 / -1		
Pitch circle ∅		mm	142	180	232	285	334
Thread ∅					4×M8		
Magnetic field height		mm			10		
Weight		kg	8	13	20	31	43
Nominal clamping force		N/cm²	120	120	150	150	150
Grinding allowance in pole area		mm			6		
Centre ∅		mm	125	150	200	250	300
Centring hole depth		mm	4	4	4	4	5
Parallel pole distribution		mm	8+3	8+3	12+3	12+3	12+3
possible to bore out to centre hole "J"		mm	15×6	20×6	25×20	25×20	25×20

38 0777

- **Neodymium magnet system for strong clamping force.**
- Concentric grooves to assist component alignment.
- Centre is magnetically inactive, so that the plate can be bored through.

ON-OFF control by hand-operated lever.

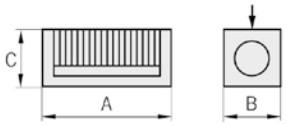
Application:
- For grinding and turning.
- **Particularly suitable for clamping annular components**, due to radial pole distribution.
- **For round and annular workpieces**

Chuck ∅		mm	130	150	200	250	300	350	500
33S 38 0810	Permanent magnetic circular chuck, with radial pole distribution		XXX	XXX	XXX	XXX	XXX	(XXX)	(XXX)
Height		mm	57	57	57	70	73	73	92
Height tolerance		mm				+0,5 / -2			
∅ non-magnetic core		mm	16	20	28	30	40	40	60
maximum boring-out ∅		mm	20	24	30	50	58	58	58
Pitch circle ∅		mm	100	80 / 120	110 / 180	140 / 220	180 / 260	220 / 300	360 / 440
Thread ∅			4×M6	8×M6	8×M6	8×M6	8×M8	8×M8	8×M8
Weight		kg	5.7	6.5	13	20	30	49	144
Nominal clamping force		N/cm²	100	100	100	150	150	150	150
Centre ∅		mm	50	50	60	80	150	170	200
Centring hole depth		mm	5	5	5	5	6	6	8

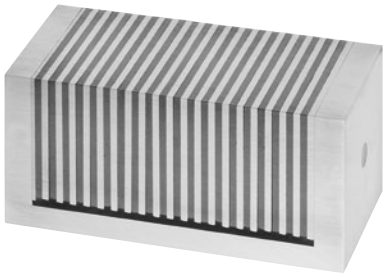
38 0810

Permanent magnet clamping blocks with fine pole distribution

Size MH202; MH202S – Three magnetic clamping faces.
Size MH202S; MH203S – $SmCo_5$ magnets permit extremely high clamping forces for materials that are difficult to machine.
Size MH203; MH203S – Two magnetic clamping faces.
Application: For profiling and machining small workpieces such as punches etc.



Type			MH202	MH202S	MH203	MH203S
335 38 0815	Permanent magnet clamping block, with fine pole distribution		XXX	(XXX)	XXX	(XXX)
A		mm	100			
B		mm	50	50	25	25
C		mm	50	50	25	25
Magnetic field height		mm	6			
Grinding allowance in pole area		mm	14	14	6	6
Pole pitch		mm	4			
maximum angular deviation		degrees	5			
Weight		kg	1.7	1.7	0.5	0.5
Nominal clamping force		N/cm²	80	180	80	180



SAV Lamellae pole blocks

- Steel-brass connection.
- Longitudinal and transverse pole distribution. Level or Vee profile.
- Lamellae made of 1 mm brass / 3 mm steel, adhesively bonded without tie rods.
- Lamellae pole blocks are themselves non-magnetic.
- Height tolerance ± 0.5 mm.

Application:
- For use only in connection with magnetic clamping plates for machining irregularly-shaped components.
- Pole blocks can be machined to any desired profile.

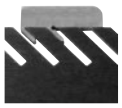
Improved version – without tie rods

Type			1	2	3	4	5	6	7	8	9	10	11
335 38 0820	Lamellae pole block (single, non-magnetic)		XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
Length		mm	65	72	75	80	80	90	100	100	100	100	120
Width		mm	60	45	60	60	80	62	50	50	70	70	80
Height		mm	40	22	30	30	50	33	40	40	41	48	50
Version			Vee block	flat	flat	flat	flat	flat	flat	Vee block	flat	flat	flat
Pole alignment			crosswise	crosswise	lengthwise	crosswise	crosswise	lengthwise	lengthwise	lengthwise	crosswise	lengthwise	crosswise
Weight		kg	0.8	0.5	0.7	0.7	2.5	0.8	1.7	1	2.1	2.7	3.8

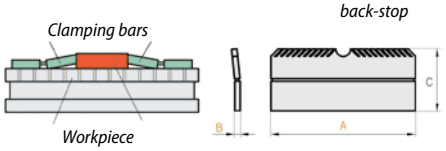
SAV Clamping bars

- Of ferro-magnetic metal.
- Long side with spring strip which when the magnet is switched on presses the workpiece to the mounting (pull-down effect).
- Supplied in pairs.

Application: For reliable clamping of **non-magnetic materials** on magnets.
Supplied with: Supplied with workpiece back-stop (apart from size 4).



Workpiece back-stop

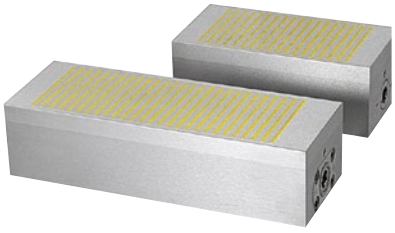


Height B		mm	1	1,6	2,8	3,7	4
335 38 0825	Clamping bars		XXX	XXX	XXX	XXX	XXX
A		mm	150	150	150	250	100
C		mm	40	43	43	52	45
B		mm	1	1.6	2.8	3.7	4

SAV Neodymium magnetic clamping blocks

- **Extremely high clamping force** due to specially developed process.
- Sturdy all-steel body with an ON-OFF switch on the end face.
- Lamellae made of 2 mm brass / 4 mm steel.

Application:
- **For components which are difficult to clamp, such as Ferrotic, carbide with cobalt.**
- For spark erosion and grinding.

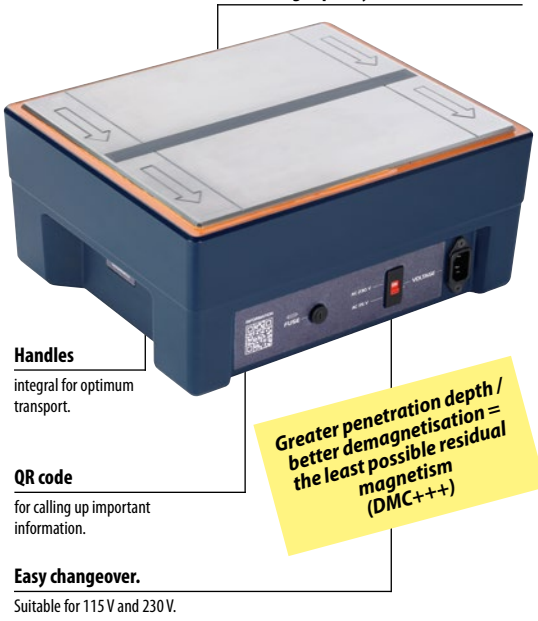


Length		mm	140	200
335 38 0870	Neodymium magnetic clamping block		XXX	XXX
Width		mm	70	
Height		mm	51	
Height tolerance		mm	+0.5 / -2	
Magnetic field height		mm	4	
Weight		kg	3	4.2
Nominal clamping force		N/cm²	180	

Garant Power demagnetisation device DM1

- Pole plate of laminated silicon sheet metal with low inductive eddy current losses.
- **Power supply 230 V / 50 Hz or 115 V / 60 Hz** (selectable).
- Protection class IP21 (fully enclosed device).
- **Duty cycle 100 %** (continuous operation).

Application:
- Demagnetisation by moving component once or more times in the same direction over the pole plate; the component must always be moved over the entire length of the pole plate.
- For demagnetising components after magnetic clamping.
- Sturdy design (die-cast aluminium body) ensures durable use even when roughly handled.



Type		300
310 38 0862	Demagnetiser	XXX
Pole area length	mm	250
Width of pole area	mm	305
Length of the housing	mm	260
Width of housing	mm	315
Height of the housing	mm	137
max. workpiece width	mm	305
Depth of penetration	mm	75
Power consumption	W	990
Weight	kg	36.5
Demagnetisation efficiency class (DMC)		+++

Garant Tesla meter measuring device for measurement of magnetism

- Light and compact design. Housing protected against dirt.
- Automatic measuring range selection. Display either in Tesla or Gauss.
- Static and dynamic measurements.
- Magnetic pole display N/S. Zero setting.

Application: For measuring residual remanence, magnetic flux density and field distribution on magnetic clamping plates.

Supplied with: Supplied with a leather case and 4 × AA batteries.

Note: If wear occurs, the sensor can easily be reordered and exchanged. (Spare part no.: 380866_1)

38 0865

Type		1
310 38 0865	Tesla meter measuring device for measurement of magnetism	XXX
Measurement range for static fields	mT	0 – 1500
Measurement range for dynamic fields	mT	0 – 750
Measuring accuracy		± 5%
Operating temperature	°C	0 – 40

SAV Manual demagnetising device for general-purpose use

- Lightweight casing for easy handling and 3m cable with plug.
- Power supply 230 V / 50 Hz, protection class IP42, power consumption 220 VA. Automatic shut-down at > 50 °C. **Duty cycle 30%.**

Application: For demagnetising the surfaces of large workpieces. Mobile use.

38 0863

Type		HD1	HD2
335 38 0863	Manual demagnetiser	XXX	XXX
Size of the active zone	mm	105×75	150×95
Depth of penetration	mm	30	40
Weight	kg	1.9	2.2
AC supply voltage	V	220; 240	
Mains frequency	Hz	50	
Demagnetisation efficiency class (DMC)		+	

SAV Demagnetiser

- Power supply 230 V / 50 Hz, protection class IP 20, power consumption maximum 920 VA.
- **Duty cycle 100 %.**

Application: The demagnetisation devices are suitable for use in inspection rooms, workshops, and on production lines. They very effectively demagnetise bearing rings, punches, dies, and other tools.

38 0861

Pole area length	mm	250	280	400
335 38 0861	Demagnetiser	XXX	XXX	XXX
Pole area length	mm	250	280	400
Width of pole area	mm	150	220	260
Width	mm	180	266	306
Height	mm		87	
Depth of penetration	mm		50	
Power consumption	W		920	
Weight	kg	11	18	24
Demagnetisation efficiency class (DMC)			++	

Garant Vacuum clamping plates, with Venturi nozzle

High-tensile aluminium, steel blue anodised.
Operating pressure 3.5 – 8 bar. The final vacuum is approx. 80 mbar (92 % vacuum).
Integral noise muffler reduces the noise generation.
38 4900 Size VR1 – Supplied with 2 ZeroClamp holes at 200 mm pitch.

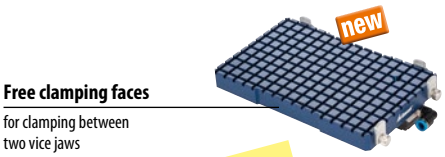
Advantage: **Low-cost entry-level system**. Low maintenance costs. Ready for immediate use.
Size VR1; VS1 – Can quickly and easily be converted to **vacuum pump operation**.

Application: For vacuum clamping **without** a vacuum pump.
Size VRV0; VSV0 – For use on **machine vices**. Especially thin components can be clamped flexibly and with little trouble.

Supplied with: Back-stop discs, compressed air hose (1 m), Venturi nozzle (1×).
38 4900 – Sealing cord Ø 4 mm (10 m).
38 4905 – Rubber adapter mat (1×).
Size VR1; VS1 – Hose adaptor (1×), sealing plugs (7×), plug LW 12 (1×), stepless adjustable clamps (2×).

Type		VRV0	VR1
31E 38 4900	Grid vacuum plate **Venturi system**	XXX	XXX
Length	mm	200	300
Width	mm	125	200
Height	mm	21	32.5
Intervals	mm	12.5	

Type		VSV0	VS1
31E 38 4905	Slit vacuum plate **Venturi system**	XXX	XXX
Length	mm	200	300
Width	mm	125	200
Height	mm	21	48



Free clamping faces
for clamping between two vice jaws

38 4900_VRV0

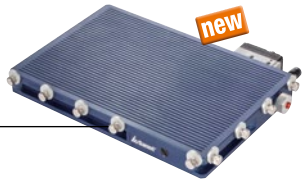
Vacuum system for vices

Venturi nozzle
on the underside for optimum accessibility

38 4905_VSV0

Pressure valve
indicates when the final vacuum has been reached.

38 4900_VR1



Back-stop discs

38 4905_VS1

Garant Vac-Mat vacuum clamping plates

Modular Vac-Mat plate

High-tensile aluminium, steel blue anodised. Supplied with 2 ZeroClamp holes at 200 mm pitch.

Supplied with: Hose adaptor (1×), connector (1×), sealing plugs (7×), stepless adjustable clamps (2×), vacuum hose (1 m), VAC-MAT mats orange (10×).

Optional extras: Vacuum creators No. 385010 – 385025.

Type		V1
31E 38 4910	VAC-MAT vacuum plate	XXX
Length	mm	300
Width	mm	200
Height	mm	30

modular version

38 4910

Vac-Mat adapter plate

Suitable for: Slit plates and grid plates that are **powered by a vacuum pump**.
Supplied with: VAC-MAT mats orange (5×), VAC-MAT mats blue (5×).

Type		AV1
31E 38 4915	VAC-MAT adapter plate	XXX
Length	mm	300
Width	mm	200
Height	mm	10

38 4915

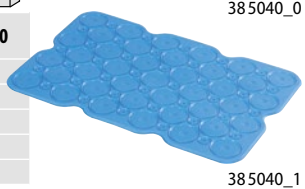
WITTE Accessories for vacuum plates

Vac-Mat mats

Reusable, depending on the application.VAC-MAT mats can be used without restriction up to 40 °C.
Size 4 – Black, only for covering unoccupied vacuum fields.

Type		0	1	2	3	4	
38L 38 5040	VAC-MAT mats	XXX	XXX	XXX	XXX	XXX	10
Length	mm	300					
Width	mm	200					
Height	mm	2.42	2.42	2.42	2.42	2.5	
Colour		orange	blue	red	green	black	
Hardness		soft	soft	soft	hard	soft	

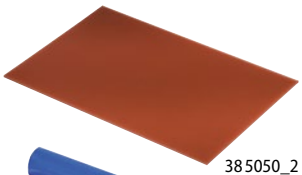
38 5040_0

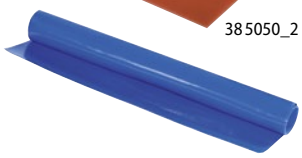


38 5040_1

Rubber adapter mats for slit plates

38 5050 – Size1-4 – medium coefficient of friction, ideal for drilling through holes, unsuitable for face milling.
Size 5 – high coefficient of friction and good plane parallelism of 2-3 hundredths.
38 5051 – Low coefficient of friction, permits face milling, for the best possible plane parallelism.


38 5050_2


38 5050_5

38 5051

Type		1	2	3	4	5
38L 38 5050	Rubber mat / roll for slit plates	XXX	XXX	XXX	XXX	XXX
38L 38 5051	Elastomer rubber mat	–	XXX	XXX	XXX	–
Length	mm	400	300	400	600	2000
Width	mm	200	200	300	400	400
Height	mm	3	3	3	3	1
Version		Mat	Mat	Mat	Mat	Roll

Sealing cord for grid plates

Application:
- The neoprene sealing cord is laid in the suction groove of the grid plate, to limit the clamping area.
- The diameter of the sealing cord depends on the cross-section of the groove.

38 5060

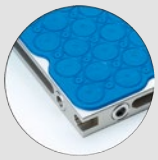
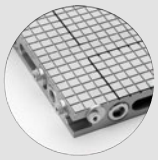
Length×∅	m×mm	50×3	50×4
38L 38 5060	Sealing cord for grid plates	XXX	XXX

WITTE Vacuum clamping technology

For vacuum clamping, a vacuum is produced under the workpiece to be clamped so that the workpiece is clamped to the clamping plate by the pressure differential. The surface structure, the size of the workpiece, and the pressure differential are crucial for the clamping force / movement resistance force of the workpiece.

Vacuum clamping technology is suitable for milling, grinding, turning, inspecting, spark eroding, measuring, coating, laser cutting, polishing, drilling, deburring, engraving, and assembly.

Advantages of vacuum clamping:
- Clamping of pressure-sensitive workpieces, therefore no damage or distortion to the component.
- Clamping of very thin sheets or films.
- 5-face machining in a single clamping.
- No vibration during machining.
- Reduced clamping times due to quick clamp / quick release process (< 1 second).
- Non-magnetic materials can be clamped.

Patented Vac-Mat system	Modular grid vacuum plate	Slit vacuum plate	Grid plates/slit plates Venturi system
			
A wide spectrum of shapes of workpieces can be clamped. Thin soft re-usable plastic mats with elastic lips on the upper face and fine holes in the centre. High clamping forces, clamping faces with high coefficient of friction. Milling of external and internal contours can be performed, yielding precise and clean burr-free cut edges on the workpiece.	For heavy-duty machining of simple-shaped workpieces with rough surfaces. Sealing cords compensate minor surface irregularities and bulges. High clamping forces, universal application, secure clamping of unmachined workpiece surfaces, since the clamping face has a high coefficient of friction.	Clamping is achieved using rubber adapter mats or covering films, which are laid between the workpiece and vacuum plate. These are placed between the workpiece and the vacuum plate. The mat is perforated to match the outline of the workpiece. The outstanding coefficient of friction offers good resistance to the movement forces that arise during machining.	For clamping components over their full face. Ensure the least possible "leakage air" entering the system. Vacuum generation is easily performed using the available compressed air. The integral Venturi system requires an operating pressure of 3.5–6 bar. As compressed air accelerates it creates a suction effect (vacuum) within the nozzle. The final vacuum is a pressure of approx. 80 mbar (92 % vacuum). The air consumption is 30–42 NL/min.

The selection criterion for vacuum power units and pumps is the size of the clamping area:

Camping area	< 0.12 m²	< 0.15 m²	< 0.5 m²	< 1.0 m²	< 2.0 m²	< 3.0 m²
Suction power	5 m³/h	10 m³/h	16 m³/h	21 m³/h	63 m³/h	100 m³/h
Available system for creating vacuum	Vacuum pump	Vacuum pump	Vacuum pump	Vacuum pump	Vacuum pump	Vacuum pump
		Vacuum power unit	Vacuum power unit	Vacuum power unit	Vacuum power unit	Vacuum power unit
				Water ring pump	Water ring pump	Water ring pump

Witte VAC-MAT

Number of mats	Required suction power
1	3 – 6 m³/h
≥ 8	16 – 21 m³/h
≥ 20	40 – 63 m³/h
≥ 50	100 – 160 m³/h

WITTE Vacuum creator

38 5010 – Vacuum pump **(only for dry machining).**

38 5020 – Vacuum power unit with vacuum storage and integral liquid separator.

38 5025 – ■ Cooling lubricant is fed to the operating medium circuit of the water ring pump.
■ Surplus liquid is returned to the machine tool.
■ No additional liquid separator necessary.

Application: Operation of vacuum clamping plates and systems.

Supplied with: 2 m vacuum hose, 3/2-way manual lever valve with ventilation, vacuum gauge.

38 5010_VP3

38 5020_VA2

38 5025_WR1

Type		VP1	VP2	VP3	VA1	VA2	VA3	VA4	WR1	WR2	WR3
38L 38 5010	Vacuum pump	–	–	–	–	–	–	–	–	–	–
38L 38 5020	Vacuum power unit	–	–	–	–	–	–	–	–	–	–
38L 38 5025	Water ring pump	–	–	–	–	–	–	–	–	–	–
Length	mm	172	271	306	–	–	–	–	463	515	515
Width	mm	147	258	226	–	–	–	–	432	572	572
∅	mm	–	–	–	500	500	500	990	–	–	–
Height	mm	143	296	182	630	630	630	1130	602	743	743
Suction power	m³/h	5	10	16	10	16	21	63	25	48	65
Motor voltage	V	230	230	230	230	230	230	400	400	400	400
Motor power	kW	0.25	0.4	0.55	0.37	0.55	0.75	1.5	0.83	1.2	2.4
Weight	kg	8	18	18	25	31	45	95	45.5	57	72

WITTE Vacuum clamping plates

High-tensile aluminium.

38 5037 – Size S2 / S3 **including ZeroClamp bores at 200 mm spacing.**

38 5030/5032 – Link-together modular design with connection elements.

Application: Vacuum clamping of plastic, glass, metals, non-ferrous metals, graphite, and other materials.

Supplied with:

38 5030 – 1 hose adapter, 7 sealing plugs, 1 plug LW12, 2 aluminium table clamps, 1 m vacuum hose, 10 m sealing cord ∅ 4 mm, stop disc.

38 5032 – 1 hose adapter, 1 connection piece, 7 sealing plugs, 2 table clamps, 1 m vacuum hose, 10 VAC-MAT mats.

38 5037 – 1 hose adapter, 7 sealing plugs, 2 clamping claws, 1 plug LW12, 1m vacuum hose, 1 rubber adapter mat, stop disc.

38 5030

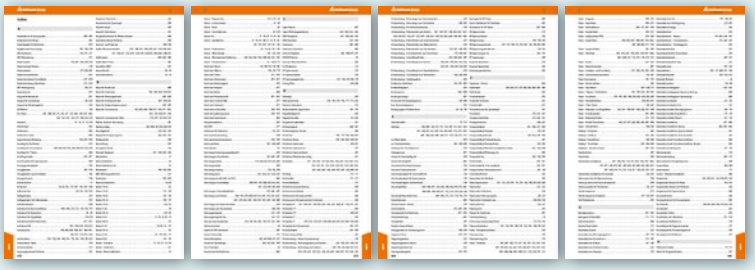
Type		R1	R2	R3
38L 38 5030	Vacuum plate with grid	–	–	–
Length	mm	300	400	600
Width	mm	200	300	400
Height	mm		32.5	
Intervals	mm		12.5	
Weight	kg	5	10	20

38 5032

Type		V1	V2	V3
38L 38 5032	VAC-MAT vacuum plate	–	–	–
Length	mm	300	400	600
Width	mm	200	300	400
Height	mm		30	
Weight	kg	5	10	20

38 5037

Type		S1	S2	S3
38L 38 5037	Slit vacuum plate, modular	–	–	–
Length	mm	300	400	600
Width	mm	200	300	400
Height	mm		48	
Weight	kg	8	16	30



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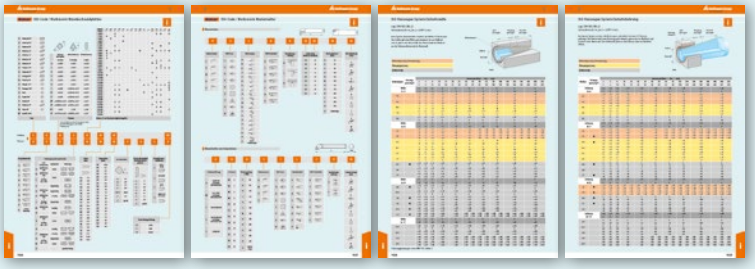

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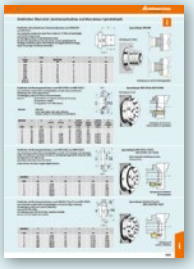

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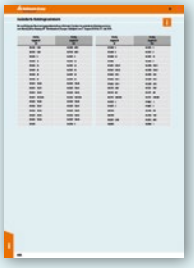

Changed catalogue numbers,
numbers and sizes
that differ from catalogue 50 1096

Fax template,
General Terms and Conditions,
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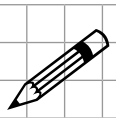
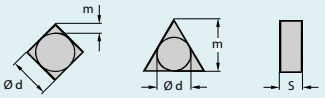


Garant ISO code / factory standard indexable inserts

	Shape
A	Rhomboid 85°
B	Rhomboid 82°
C	Rhombus 80°
D	Rhombus 55°
E	Rhombus 75°
F	Rhombus 50°
G	Rhombus 45°
H	Hexagon 120°
K	Rhomboid 55°
L	Orthogon 90°
M	Rhombus 86°
O	Octogon 135°
P	Pentagon 108°
R	Round
S	Square 90°
T	Triangle 60°
V	Rhombus 35°
W	Trigon 80°
X/Z	Special shape



	Tolerance with radius m (mm)	Tolerance in circle ∅ d (mm)	Thickness tolerance S (mm)
A	± 0.005	± 0.025	± 0.025
C	± 0.013	± 0.025	± 0.025
E	± 0.025	± 0.025	± 0.025
F	± 0.005	± 0.013	± 0.025
G	± 0.025	± 0.025	± 0.13
H	± 0.013	± 0.013	± 0.025
J	± 0.005	± 0.05 up to ± 0.15	± 0.025
K*	± 0.013	± 0.05 up to ± 0.15	± 0.025
L*	± 0.025	± 0.05 up to ± 0.15	± 0.025
M*	± 0.08 up to ± 0.20	± 0.05 up to ± 0.15	± 0.13
N*	± 0.08 up to ± 0.20	± 0.0 up to ± 0.15	± 0.025
P**	± 0.04	± 0.04	± 0.04
U*	± 0.13 up to ± 0.38	± 0.08 up to ± 0.25	± 0.13

Tolerance

Generally the same applies for sintered inserts, partly dependent on size
** factory standard

Inner circle (mm)	A	B	C	D	E	K	L	M	O	P	R	S	T	W
3.970			03		S5							03	06		02
4.100	06		S4												
4.600		07													
4.920					06										
5.000											05				03
5.560			05										09		
6.000											06				
6.350	09		06	07				06				06	11	11	04
6.680	10	11													
7.000	13										07				
7.870	12														
7.940			08	09								07	13		05
8.000											08	08			
8.200													14		
9.525	16		09	11		16						09	16	16	06
9.600		17					12								
10.000											10				
10.200	18														
11.000												11			
11.110								11							
12.000											12				07
12.700			12	15					04	12		12	22	22	08
14.290															09
15.875			16	19	08							15	27		10
16.000									06		16				
19.050			19	23								19	33		
20.000											20				
21.000															13
22.225			22	27								22	38		
25.000											25				
25.400			25	31								25	44		
26.194															17
31.750			32	38								31	55		
32.000											32				

Inner circle ∅ for insert size

Turning
Milling

C	N	M	G	12	04	08					(N)
A	P	K	T	16	04	08	P	D	F		R

Main clearance angle

A	3°
B	5°
C	7°
D	15°
E	20°
F	25°
G	30°
N	0°
P	11°
O	further clearance angles

Fastening and chip breaker

	Hole configuration	Chip breaker	Insert type
A	Cylindrical hole	none	
B	Cylindrical hole + Countersink (70 ≈ 90°)	none	
C			
F	-	double-sided	
G	Cylindrical hole	double-sided	
H	Cylindrical hole + Countersink (70 ≈ 90°)	single-sided	
J		double-sided	
M	Cylindrical hole	single-sided	
N	-	none	
Q	Cylindrical hole + Countersink (40 ≈ 60°)	none	
R	-	single-sided	
T	Cylindrical hole + Countersink (40 ≈ 60°)	single-sided	
U		double-sided	
W		none	
X	-	-	Special design

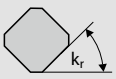
Thickness (mm)

S4	1.16
01	1.59
T1	1.98
02	2.38
T2	2.78
03	3.18
35	3.58
36	3.60
T3	3.97
04	4.76
48	4.84
L5	5.00
M5	5.00
05	5.56
T5	5.90
T6	6.10
06	6.35
67	6.74
T7	7.00
07	7.94
09	9.52
14	14.29
19	19.05

Corner radius (mm)

00	without
01	0.1
02	0.2
03	0.3
04	0.4
05	0.5
06	0.6
08	0.8
10	1.0
12	1.2
15	1.5
16	1.6
20	2.0
24	2.4
25	2.5
28	2.8
30	3.0
31	3.1
32	3.2
40	4.0
50	5.0
60	6.0

Adjustment angle



A	45°
D	60°
E	75°
F	85°
M O	Round
P	90°
Z	special

Standard clearance angle of the wide smooth flat chamfer

C	7°
D	15°
E	20°
F	25°
N	0°
P	11°
Z	22°
Z	special

Cutting edge version

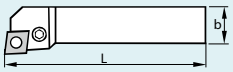
F	sharp-edged
E	honed
T	chamfered
S	chamfered and honed

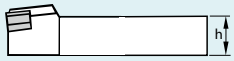
Direction of machining

R	right-hand
L	left-hand
N	neutral

Garant® ISO code / factory standard toolholder

Toolholder





P	C	L	N	R	25	25	M	16

Clamping system

C	
D	
M	
P	
S	

Insert shape

C	
D	
G	
K	
R	
S	
T	
V	
W	

Tool type

A	
B	
D	
E	
F	
G	
H	
J	
K	
L	
M	
N	
P	
Q	
R	
S	
T	
U	
V	
X	Special versions

Insert clearance angle

B	
C	
D	
E	
F	
N	
P	

Direction of machining

R	
L	
N	

Shank (mm) height (h) / width (b)

08	08
10	10
12	12
16	16
20	20
25	25
32	32
40	40
50	50

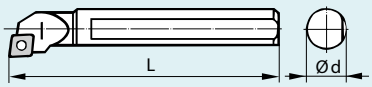
Tool length L (mm)

D	60
E	70
F	80
H	100
K	125
M	150
N	160
P	170
R	200
S	250
T	300
U	350
X	Special length

Cutting edge length (mm)

C	
D	
G	
K	
R	
S	
T	
V	
W	

Toolholder for internal threads



A	16	M	S	C	L	C	R	09

Shank type

A	Steel shank with through coolant supply
AH	HSS shank with through coolant supply
C	Carbide shank
E	Carbide shank with through coolant supply
S	Steel shank

∅ d (mm)

04	4
05	5
06	6
08	8
10	10
12	12
16	16
20	20
25	25
32	32
40	40
50	50

Tool length L (mm)

F	80
G	90
H	100
J	110
K	125
L	140
M	150
Q	180
R	200
S	250
T	300
U	350
X	Special length

Clamping system

D	
M	
P	
S	

Insert shape

C	
D	
G	
R	
S	
T	
V	
W	

Adjustment angle

F	
J	
K	
L	
Q	
U	
V	
X	

Insert clearance angle

B	
C	
D	
E	
F	
N	
P	

Direction of machining

R	
L	

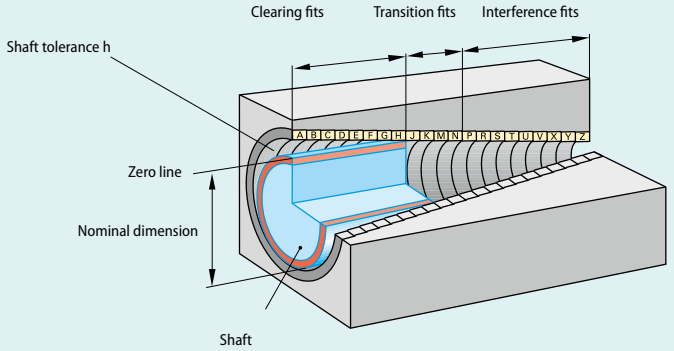
Cutting edge length (mm)

C	
D	
G	
K	
R	
S	
T	
V	
W	

ISO system of standardised fits for shafts

(see DIN ISO 286-2)
Size limits in µm (= 0.001 mm).

In the standardised shaft system, all shafts are given h tolerances. The largest dimension of a shaft is taken as both the zero line and the nominal size. The smallest dimension is smaller than the nominal size by the amount of the tolerance.



Interference fit (press fit)
Transition fit
Clearance fit

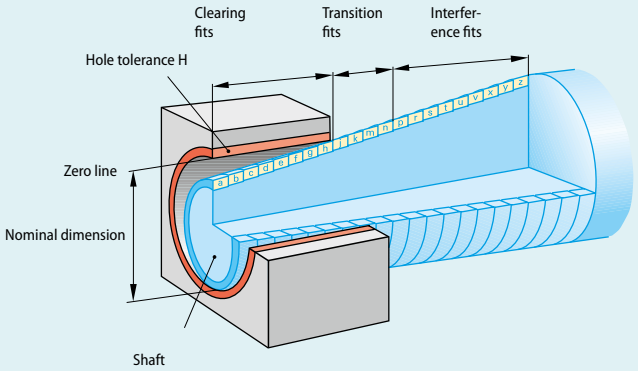
Holes	Preferred fit*)	Nominal dimension over . . . to . . . mm																			
		1 3	3 6	6 10	10 14	14 18	18 24	24 30	30 40	40 50	50 65	65 80	80 100	100 120	120 140	140 160	160 180	180 200	200 225	225 250
Shaft h 5		0 -4	0 -5	0 -6	0 -8		0 -9		0 -11		0 -13		0 -15		0 -18			0 -20		
P 6		-6 -12	-9 -17	-12 -21	-15 -26		-18 -31		-21 -37		-26 -45		-30 -52		-36 -61			-41 -70		
N 6		-4 -10	-5 -13	-7 -16	-9 -20		-11 -24		-12 -28		-14 -33		-16 -38		-20 -45			-22 -51		
M 6		-2 -8	-1 -9	-3 -12	-4 -15		-4 -17		-4 -20		-5 -24		-6 -28		-8 -33			-8 -37		
J 6		+2 -4	+5 -3	+5 -4	+6 -5		+8 -5		+10 -6		+13 -6		+16 -6		+18 -7			+22 -7		
H 6		+6 0	+8 0	+9 0	+11 0		+13 0		+16 0		+19 0		+22 0		+25 0			+29 0		
Shaft h 6		0 -6	0 -8	0 -9	0 -11		0 -13		0 -16		0 -19		0 -22		0 -25			0 -29		
S 7		-14 -24	-15 -27	-17 -32	-21 -39		-27 -48		-34 -59		-42 -72	-48 -78	-58 -93	-66 -101	-77 -117	-85 -125	-93 -133	-105 -151	-113 -159	-123 -169
R 7		-10 -20	-11 -23	-13 -28	-16 -34		-20 -41		-25 -50		-30 -60	-32 -62	-38 -73	-41 -76	-48 -88	-50 -90	-53 -93	-60 -106	-63 -109	-67 -113
N 7		-4 -14	-4 -16	-4 -19	-5 -23		-7 -28		-8 -33		-9 -39		-10 -45		-12 -52			-14 -60		
M 7		-2 -12	0 -12	0 -15	0 -18		0 -21		0 -25		0 -30		0 -35		0 -40			0 -46		
K 7		0 -10	+3 -9	+5 -10	+6 -12		+6 -15		+7 -18		+9 -21		+10 -25		+12 -28			+13 -33		
J 7		+4 -6	+6 -6	+8 -7	+10 -8		+12 -9		+14 -11		+18 -12		+22 -13		+26 -14			+30 -16		
H 7	●	+10 0	+12 0	+15 0	+18 0		+21 0		+25 0		+30 0		+35 0		+40 0			+46 0		
G 7		+12 +2	+16 +4	+20 +5	+24 +6		+28 +7		+34 +9		+40 +10		+47 +12		+54 +14			+61 +15		
F 7		+16 +6	+22 +10	+28 +13	+34 +16		+41 +20		+50 +25		+60 +30		+71 +36		+83 +43			+96 +50		
Shaft h 9		0 -25	0 -30	0 -36	0 -43		0 -52		0 -62		0 -74		0 -87		0 -100			0 -115		
H 8	●	+14 0	+18 0	+22 0	+27 0		+33 0		+39 0		+46 0		+54 0		+63 0			+72 0		
H 11		+60 0	+75 0	+90 0	+110 0		+130 0		+160 0		+190 0		+220 0		+250 0			+290 0		
F 8	●	+20 +6	+28 +10	+35 +13	+43 +16		+53 +20		+64 +25		+76 +30		+90 +36		+106 +43			+122 +50		
E 9	●	+39 +14	+50 +20	+61 +25	+75 +32		+92 +40		+112 +50		+134 +60		+159 +72		+185 +85			+215 +100		
D 10	●	+60 +20	+78 +330	+98 +40	+120 +50		+149 +65		+180 +80		+220 +100		+260 +120		+305 +145			+355 +170		
C 11	●	+120 +60	+145 +70	+170 +80	+205 +95		+240 +110		+280 +110	+290 +130	+330 +140	+340 +150	+390 +170	+400 +180	+450 +200	+460 +210	+480 +230	+530 +240	+550 +260	+570 +280
Shaft h 11		0 -60	0 -75	0 -90	0 -110		0 -130		0 -160		0 -190		0 -220		0 -250			0 -290		
H 11		+60 0	+75 0	+90 0	+110 0		+130 0		+160 0		+190 0		+220 0		+250 0			+290 0		
D 11		+80 +20	+105 +30	+130 +40	+160 +50		+195 +65		+240 +80		+290 +100		+340 +120		+395 +145			+460 +170		
C 11		+120 +60	+145 +70	+170 +80	+205 +95		+240 +110		+280 +120	+290 +130	+330 +140	+340 +150	+390 +170	+400 +180	+450 +200	+460 +210	+480 +230	+530 +240	+550 +260	+570 +280
A 11		+330 +270	+345 +270	+370 +280	+400 +290		+430 +300		+470 +310	+480 +320	+530 +340	+550 +360	+600 +380	+630 +410	+710 +460	+770 +520	+830 +580	+950 +660	+1030 +740	+1110 +820

*) Preferred fits to DIN 7157, series 1.

ISO system of standardised fits for holes

(see DIN ISO 286-2)
Limit dimensions in µm (= 0.001 mm).

In this system, all holes are produced with a standard H tolerance. The smallest dimension is taken as both the zero line and the nominal size. The largest dimension is larger than the zero line by the amount of the tolerance.



Interference fit (press fit)
Transition fit
Clearance fit

Shafts	Preferred fit*)	Nominal dimension over . . . to . . . mm																		
		1	3	6	10	14	18	24	30	40	50	65	80	100	120	140	160	180	200	225
		3	6	10	14	18	24	30	40	50	65	80	100	120	140	160	180	200	225	250
Hole H 6		+6 0	+8 0	+9 0	+11 0		+13 0		+16 0		+19 0		+22 0			+25 0			+29 0	
p 5		+10 +6	+17 +12	+21 +15	+26 +18		+31 +22		+37 +26		+45 +32		+52 +37			+61 +43			+70 +50	
n 5		+8 +4	+13 +18	+16 +10	+20 +12		+24 +15		+28 +17		+33 +20		+38 +23			+45 +27			+51 +31	
k 6		+6 0	+9 +1	+10 +1	+12 +1		+15 +2		+18 +2		+21 +2		+25 +3			+28 +3			+33 +4	
j 6		+4 -2	+6 -2	+7 -2	+8 -3		+9 -4		+11 -5		+12 -7		+13 -9			+14 -11			+16 -13	
h 5		0 -4	0 -5	0 -6	0 -8		0 -9		0 -11		0 -13		0 -15			0 -18			0 -20	
Hole H 7		+10 0	+12 0	+15 0	+18 0		+21 0		+25 0		+39 0		+35 0			+40 0			+46 0	
s 6		+20 +14	+27 +19	+32 +23	+39 +28		+48 +35		+59 +43		+72 +35	+78 +59	+93 +71	+101 +79	+117 +92	+125 +100	+133 +108	+151 +122	+159 +130	+169 +140
r 6	●	+16 +10	+23 +15	+28 +19	+34 +23		+41 +28		+50 +34		+60 +41	+62 +43	+73 +51	+76 +54	+88 +63	+90 +65	+93 +68	+106 +77	+109 +80	+113 +84
n 6	●	+10 +4	+16 +8	+19 +10	+23 +12		+28 +15		+33 +17		+39 +20		+45 +23			+52 +27			+60 +31	
m 6		+8 +2	+12 +4	+15 +6	+18 +7		+21 +8		+25 +9		+30 +11		+35 +13			+40 +15			+46 +17	
k 6		+6 0	+9 +1	+10 +1	+12 +1		+15 +2		+18 +2		+21 +2		+25 +3			+28 +3			+33 +4	
j 6		+4 -2	+6 -2	+7 -2	+8 -3		+9 -4		+11 -5		+12 -7		+13 -9			+14 -11			+16 -13	
h 6	●	0 -6	0 -8	0 -9	0 -11		0 -13		0 -16		0 -19		0 -22			0 -25			0 -29	
g 6		-2 -8	-4 -12	-5 -14	-6 -17		-7 -20		-9 -25		-10 -29		-12 -34			-14 -39			-15 -44	
r 7	●	-6 -16	-10 -22	-13 -28	-16 -34		-20 -41		-25 -50		-30 -60		-36 -71			-43 -83			-50 -96	
Hole H 8		+14 0	+18 0	+22 0	+27 0		+33 0		+39 0		+46 0		+54 0			+63 0			+72 0	
x 8	●	+34 +20	+46 +28	+56 +34	+67 +40	+72 +45	+87 +54	+97 +64	+119 +70	+136 +97	+168 +122	+192 +146	+232 +178	+264 +210	+311 +248	+343 +280	+373 +310	+422 +350	+457 +385	+497 +425
u 8	●	+32 +18	+41 +23	+50 +28	+60 +33	+60 +33	+74 +41	+81 +48	+99 +60	+109 +70	+133 +87	+148 +102	+178 +124	+198 +144	+233 +170	+253 +190	+273 +210	+308 +236	+330 +258	+356 +284
h 9	●	0 -25	0 -30	0 -36	0 -43		0 -52		0 -62		0 -74		0 -87			0 -100			0 -115	
f 7	●	-6 -16	-10 -22	-13 -28	-16 -34		-20 -41		-25 -50		-30 -60		-36 -71			-43 -83			-50 -96	
d 9		-20 -45	-30 -60	-40 -76	-50 -93		-65 -117		-80 -142		-100 -174		-120 -207			-145 -245			-170 -285	
Hole H 11		+60 0	+75 0	-90 0	+110 0		+130 0		+160 0		+190 0		+220 0			+250 0			+290 0	
h 9		0 -25	0 -30	0 -36	0 -43		0 -52		0 -62		0 -74		0 -87			0 -100			0 -115	
h 11		0 -60	0 -75	0 -90	0 -110		0 -130		0 -160		0 -190		0 -220			0 -250			0 -290	
d 9		-20 -45	-30 -60	-40 -76	-50 -93		-65 -117		-80 -142		-100 -174		-120 -207			-145 -245			-170 -285	
c 11		-60 -120	-70 -145	-80 -170	-95 -205		-110 -240		-120 -280	-130 -290	-140 -330	-150 -340	-170 -390	-180 -400	-200 -450	-210 -460	-230 -480	-240 -530	-260 -550	-280 -570
a 11		-270 -330	-270 -345	-280 -370	-290 -400		-300 -430		-310 -470	-320 -480	-340 -530	-360 -550	-380 -600	-410 -630	-460 -710	-520 -770	-580 -830	-660 -950	-740 -1030	-820 -1110

Supplement to ISO system of standardised fits for holes

(Extract from DIN 7160, DIN 7161)
Size limits in µm (= 0.001 mm).

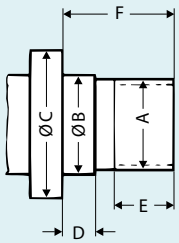
External sizes

Shafts	Nominal size over ... to ... mm									
	1 3	3 6	6 10	10 18	18 30	30 50	50 80	80 120	120 180	180 250
d 11	- 20 - 80	- 30 - 105	- 40 - 130	- 50 - 160	- 65 - 195	- 80 - 240	- 100 - 290	- 120 - 340	- 145 - 395	- 170 - 460
e 8	- 14 - 28	- 20 - 38	- 25 - 47	- 32 - 59	- 40 - 73	- 50 - 89	- 60 - 106	- 72 - 126	- 85 - 148	- 100 - 172
f 8	- 6 - 20	- 10 - 28	- 13 - 35	- 16 - 43	- 20 - 53	- 25 - 64	- 30 - 76	- 36 - 90	- 43 - 106	- 50 - 122
f 9	- 6 - 31	- 10 - 40	- 13 - 49	- 16 - 59	- 20 - 72	- 25 - 87	- 30 - 104	- 36 - 123	- 43 - 143	- 50 - 165
fg 6	- 4 - 10	- 6 - 14	- 8 - 17	- 10 - 21	- 12 - 25	- 15 - 31				
h 7	0 - 10	0 - 12	0 - 15	0 - 18	0 - 21	0 - 25	0 - 30	0 - 35	0 - 40	0 - 46
h 8	0 - 14	0 - 18	0 - 22	0 - 27	0 - 33	0 - 39	0 - 46	0 - 54	0 - 63	0 - 72
h 10	0 - 40	0 - 48	0 - 58	0 - 70	0 - 84	0 - 100	0 - 120	0 - 140	0 - 160	0 - 185
h 12	0 - 100	0 - 120	0 - 150	0 - 180	0 - 210	0 - 250	0 - 300	0 - 350	0 - 400	0 - 460
js 11	+ 30 - 30	+ 38 - 38	+ 45 - 45	+ 55 - 55	+ 65 - 65	+ 80 - 80	+ 95 - 95	+ 110 - 110	+ 125 - 125	+ 145 - 145
js 12	+ 50 - 50	+ 60 - 60	+ 75 - 75	+ 90 - 90	+ 105 - 105	+ 125 - 125	+ 150 - 150	+ 175 - 175	+ 200 - 200	+ 230 - 230
js 14	+ 125 - 125	+ 150 - 150	+ 180 - 180	+ 215 - 215	+ 260 - 260	+ 310 - 310	+ 370 - 370	+ 435 - 435	+ 500 - 500	+ 575 - 575
js 16	+ 300 - 300	+ 375 - 375	+ 450 - 450	+ 550 - 550	+ 650 - 650	+ 800 - 800	+ 950 - 950	+ 1100 - 1100	+ 1250 - 1250	+ 1450 - 1450
k 10	+ 40 0	+ 48 0	+ 58 0	+ 70 0	+ 84 0	+ 100 0	+ 120 0	+ 140 0	+ 160 0	+ 180 0
k 11	+ 60 0	+ 75 0	+ 90 0	+ 110 0	+ 130 0	+ 160 0	+ 190 0	+ 220 0	+ 250 0	+ 290 0
k 12	+ 90 0	+ 120 0	+ 150 0	+ 180 0	+ 210 0	+ 250 0	+ 300 0	+ 350 0	+ 400 0	+ 460 0
k 16	+ 600 0	+ 750 0	+ 900 0	+ 1100 0	+ 1300 0	+ 1600 0	+ 1900 0	+ 2200 0	+ 2500 0	+ 2900 0
p 6	+ 12 + 6	+ 20 + 12	+ 24 + 15	+ 29 + 18	+ 35 + 22	+ 42 + 26	+ 51 + 32	+ 59 + 37	+ 68 + 43	+ 79 + 50

Lathe chuck overview: Mounting and machine spindle noses

Lathe chucks with cylindrical centring mount to DIN 6350 and DIN 6351.

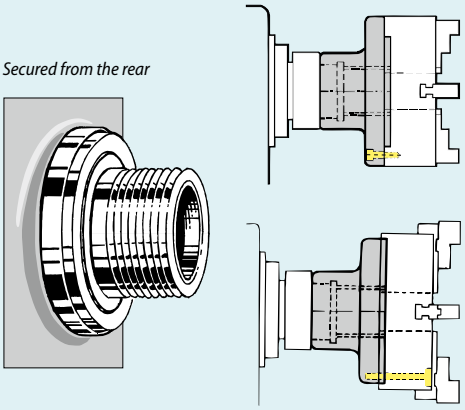
These lathe chucks are screwed to the DIN 800 spindle nose using a flange (see No. 317000).
They are secured using hexagon socket head screws.
The lathe chucks are also applicable on spindle noses with a short taper, using a short taper flange. However, it is preferable to use lathe chucks with an integral short taper because of the lower overhang.



A Tolerance medium	B (g5) mm	C (smallest size) mm	D mm	E mm	F mm
M 20	21	30	6.3	10	20
M 24	25	36	8	12	24
M 33	34	50	9	14	30
M 39	40	56	10	16	35
M 45	46	67	11	18	40
M 52	55	80	12	20	45
M 60	62	90	14	22	50
M 76×6	78	112	16	30	63
M 105×6	106	150	20	40	80

Spindle noses to DIN 800

Secured from the rear



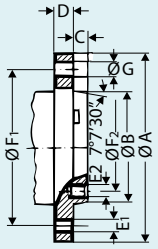
Secured from the front for self-centring chucks.

Lathe chucks with short taper arbor to DIN 55026 and DIN 55021.

These lathe chucks fit directly on spindle noses to DIN 55026 and DIN 55021 (front fastening).
They are secured with socket head screws.

Form A: Tapped holes in the outer pitch circle of the flange.
No inner pitch circle.
Taper sizes 4 and upwards have 4 driving slots.

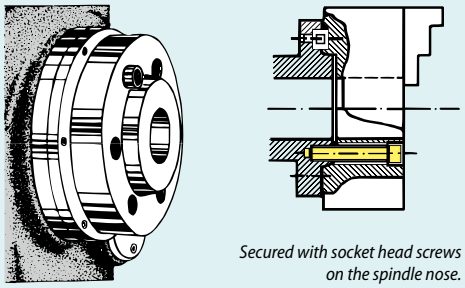
Note: DIN 55021
No longer included in the new standard.
Outer hole circle F available from lathe chuck Ø 250.



Spindle nose size	A mm	B mm	C (Form A) mm	D (Form B) mm	D mm	No. of holes on the external pitch circle (F1) E1	F1 (external pitch circle) mm	No. of holes on the internal pitch circle (F2) E2	F2 (internal pitch circle diameter) mm
3	92	53.983	11	–	16	3×M 10	70.6	–	–
4	108	63.521	11	–	20	11×M 10	82.6	–	–
5	133	82.573	13	14.288	22	11×M 10	104.8	8×M 10	61.9
6	165	106.385	14	15.875	25	11×M 12	133.4	8×M 12	82.6
8	210	139.731	16	17.462	28	11×M 16	171.4	8×M 16	111.1
11	280	196.883	18	19.050	35	11×M 20	235.0	8×M 20	165.1
15	380	285.791	19	20.638	42	12×M 14	330.2	11×M 24	247.6

Spindle noses to DIN 55026; DIN 55028A

Secured from the front

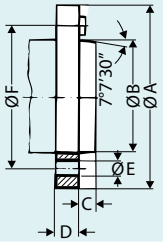


Secured with socket head screws on the spindle nose.

Lathe chucks with short taper arbor to DIN 55022 and DIN 55027.

These lathe chucks are secured directly on to DIN 55022 spindle noses.
They are secured with studs, collar nuts and the bayonet plate attached to the spindle nose.
With driving slots from taper size 4 upwards.

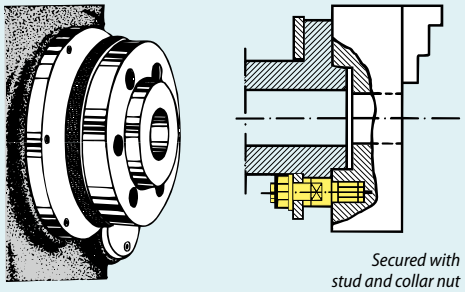
New standard: DIN 55027 or ISO 702/III
(Difference compared to DIN 55022: tighter taper tolerances).



Spindle nose Size	A mm	B mm	C mm	D mm	E mm	F mm
3	102	53.985	11	16	3×21	75.0
4	112	63.525	11	20	3×21	85.0
5	135	82.575	13	22	4×21	104.8
6	170	106.390	14	25	4×23	133.4
8	220	139.735	16	28	4×29	171.4
11	290	196.885	18	35	6×36	235.0

Spindle noses DIN 55022; 55027; DIN 55028C; ISO 702/III

Most commonly used type on new lathes.

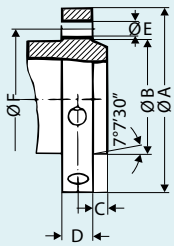


Secured with stud and collar nut

Lathe chucks with short taper series according to ASA B5.9 type D1 and DIN 55029.

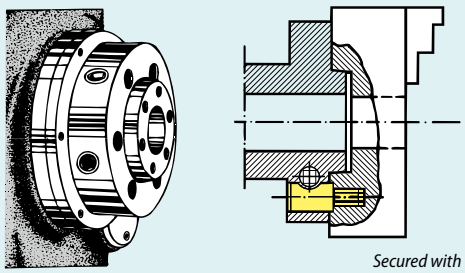
These lathe chucks are secured directly to spindle noses to ASA B5.9 type D1.
They are fastened with Camlock studs.

New standard: DIN 55029.
The studs to DIN 55029 have metric threads, those to ASA B5.9 have imperial threads.



Spindle nose Size	A mm	B mm	C mm	D mm	E mm	F mm
3	92.1	53.985	11.1	31.8	3×15.1	70.66
4	117.5	63.525	11.1	33.3	3×16.7	82.55
5	146.0	82.575	12.7	38.1	6×19.8	104.80
6	181.0	106.390	14.3	44.5	6×23.0	133.40
8	225.4	139.735	15.9	50.8	6×26.2	171.40
11	298.5	196.885	17.5	60.3	6×30.1	235.00

Spindle noses to ASA B5.9 type D1 DIN 55029 ISO 702/II



Secured with Camlock studs

Changed catalogue numbers

The following number listing gives an overview of catalogue numbers which have changed from catalogue 50 to catalogue 51 – Machining Technology. Valid from 01 August 2020 to 31 July 2021.

Catalogue Issue 50 old	Catalogue Issue 51 new
122514	122512
122524	122522
122534	122532
250027 DM/12	264838 DM/40
250028 DM/12	264839 DM/40
250032 25/12	264826 ST/1
250032 32/12	264826 ST/2
250032 40/12	264826 ST/3
250033 25/12	264827 ST/1
250033 32/12	264827 ST/2
250033 40/12	264827 ST/3
250617 DM/15	264838 DM/42
250618 DM/15	264839 DM/42
250622 32/15	264826 ST/4
250622 40/15	264826 ST/5
250623 32/15	264827 ST/4
250623 40/15	264827 ST/5
251410 DM/16	264838 DM/43
251714 DM/16	264838 DM/44
251715 DM/16	264839 DM/44
251918 DM/08	264838 DM/45
251919 DM/08	264839 DM/45
260008 DM/12	264838 DM/46
260008 QC/09	264834 QC/20
260009 DM/12	264839 DM/46
260009 QC/09	264835 QC/20
260012 25/12	264826 ST/6
260012 32/12	264826 ST/7
260012 40/12	264826 ST/8
260013 25/12	264827 ST/6
260013 32/12	264827 ST/7
260013 40/12	264827 ST/8
260310 25/11	264826 ST/9
260310 32/11	264826 ST/10
260310 40/11	264826 ST/11
260311 25/11	264827 ST/9
260311 32/11	264827 ST/10
260311 40/11	264827 ST/11
260316 25/11	264826 ST/12
260316 32/11	264826 ST/13
260316 40/11	264826 ST/14
260317 25/11	264827 ST/12
260317 32/11	264827 ST/13
260317 40/11	264827 ST/14
260405 QC/07	264834 QC/22
260405 QC/11	264834 QC/23
260406 QC/07	264835 QC/22

Catalogue Issue 50 old	Catalogue Issue 51 new
260406 QC/11	264835 QC/23
260408 DM/11	264838 DM/48
260408 QC/07	264834 QC/24
260408 QC/11	264834 QC/25
260409 DM/11	264839 DM/48
260409 QC/07	264835 QC/24
260409 QC/11	264835 QC/25
260916 DM/16	264838 DM/49
260916 QC/11	264834 QC/28
260916 QC/16	264834 QC/29
260917 DM/16	264839 DM/49
260917 QC/11	264835 QC/28
260917 QC/16	264835 QC/29
261114 25/11	264826 ST/15
261114 32/16	264826 ST/16
261114 40/16	264826 ST/17
261115 25/11	264827 ST/15
261115 32/16	264827 ST/16
261115 40/16	264827 ST/17
261321 DM/16	264838 DM/50
261321 QC/11	264834 QC/30
261322 DM/16	264839 DM/50
261322 QC/11	264835 QC/30
272084 DM/16	264838 DM/51
272084 QC/16	264834 QC/33
272085 DM/16	264839 DM/51
272085 QC/16	264835 QC/33
273868 26/20	273893 20
273868 26/25	273893 25
273868 32/20	273894 20
273868 32/25	273894 25
273020 19/16	273896 16
273020 26/20	273897 20
273020 26/25	273897 25
273020 32/20	273898 20
273020 32/25	273898 25
290330 13	290330 14
290330 16	290330 17
290332 13	290332 14
290332 16	290332 17
290334 13	290334 14
290334 16	290334 17
290334 37	290334 38
290336 13	290336 14
290336 16	290336 17
290336 37	290336 38

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